

# What Matters in the Age of AI

Keiwa High School and University Joint Training Seminar

Hiroshi Suzuki

Trustee, Keiwa Gakuen

November 29, 2025

## Abstract

For the High School and University Joint Training Session themed "Christian Education in the AI Era," I received a request to speak on the following topics:

1. The current status of AI evolution
2. How society will transition due to AI in the future
3. Where the significance of human existence will be sought within that context
4. The role of education in the AI era, particularly the mission that Christian education should fulfill

I have absolutely no confidence in speaking adequately about the requested topics regarding Artificial Intelligence (AI), where we are surprised by new developments every month and new news flows to the general public several times a week. However, since I have been thinking about these changes since around 2016, I believe I can provide some foundations for us to think together. The world faces difficult challenges such as the gap between rich and poor, conflicts in various regions, the possibility of global pandemics of infectious diseases, and global warming, and the division of human society is becoming serious. Will AI widen these serious divisions further in this era, or will AI provide wisdom to consider a different path? It seems certain that we are in the midst of great change. In such times, what should we cherish, how should we face it, learn, and live? I would like to think about this together with you all.

**Profile: Hiroshi Suzuki (Trustee, Keiwa Gakuen / Professor Emeritus, International Christian University)**

[no.3]

At university, I taught mathematics and data science, took responsibility for supporting students with difficulties and Service

Learning, and held a Bible study meeting every week at my on-campus residence. I retired in March 2019 at the age of 65. While volunteering and serving as a board member at children's homes and employment support facilities for people with disabilities, I was invited to the Freshman Welcome Public Academic Lecture at Keiwa College this spring, where I spoke about learning, including Artificial Intelligence (AI). After that, I was asked to become a trustee of Keiwa Gakuen, and I am learning about Keiwa Gakuen and Niigata little by little.

(Personal Website: Freshman Welcome Public Academic Lecture  
<https://icu-hsuzuki.github.io/science/index-j.html#keiwa>)

# Contents

<b>1</b>	<b>Introduction</b>	<b>4</b>
1.1	About the Lecture Content . . . . .	4
1.2	Self-Introduction: High School Days . . . . .	5
1.3	53-Day Cargo Ship Trip to Southeast Asia . . . . .	7
1.4	Subsequent Path of Living Together . . . . .	9
<b>2</b>	<b>Encounter with AlphaGo and Artificial Intelligence</b>	<b>10</b>
2.1	The Shock of AlphaGo . . . . .	10
2.2	Demis Hassabis . . . . .	11
2.3	After AlphaGo . . . . .	12
2.4	From Education to Learning . . . . .	12
<b>3</b>	<b>Progress of Artificial Intelligence (AI)</b>	<b>13</b>
3.1	Turing Test: . . . . .	13
3.2	Nobel Prize in Physics / Nobel Prize in Chemistry . . . . .	15
3.3	Evolution and Current Status of AI . . . . .	15
3.3.1	Development of Image Recognition, Image Generation .	15
3.3.2	Revolution in Natural Language Processing (NLP) .	17
3.3.3	Reinforcement Learning . . . . .	18
3.3.4	Expansion of Application to Real Society . . . . .	18
3.4	Road to Artificial General Intelligence (AGI) . . . . .	20
<b>4</b>	<b>Evolution of AI and Social Change</b>	<b>21</b>
4.1	How to Deal with It, What is Danger . . . . .	21
4.1.1	Will AI Dominate Humans? What Can AI Not Do? .	21
4.1.2	Utility is Being Verified Explosively in Various Fields, Stopping is Inappropriate!?	21
4.2	Regarding Risks, We Don't Even Know What is Dangerous Well	22
4.3	Challenges and Risks Brought by AGI: . . . . .	23
<b>5</b>	<b>AI and Christian Education</b>	<b>24</b>
5.1	Duolingo . . . . .	24
5.2	Education / Learning . . . . .	25
5.3	Future Construction of Education: . . . . .	26
5.4	AI Education and Christianity . . . . .	27
<b>6</b>	<b>Summary</b>	<b>29</b>
6.1	Why don't you try using AI . . . . .	29
6.2	What I did not talk about . . . . .	29
6.3	Story of the Middle School Student . . . . .	30

# 1 Introduction

## 1.1 About the Lecture Content

Today, I will talk about Artificial Intelligence (AI). Here, I will refer to what is called Generative AI, such as Open AI's ChatGPT, Google's Gemini, Anthropic's Claude, X's Grok, and Perplexity, as AI. How many of you use any one of these, even once a week? Could you please raise your hands?

Thank you very much.

[no.4]

The other day, when I was talking to a female acquaintance, she said that her junior high school son used AI for all his summer vacation homework. He used AI for his independent research project, let AI translate and think about English problems, and asked AI to solve math problems. regarding the independent research, the tone was unnatural for a junior high school student, so his mother corrected it. According to the son, AI praises him and always gives positive comments, so he enjoys using it when studying. This son is not special; it seems that the use of AI is spreading generally among junior high school students. He says he is using Google Gemini.

How do you receive this story? If we think about it a little, I think there are the following issues.

- Negative point: It differs from the aim and assumption of the person who assigned the homework.
- Positive point: He utilizes AI himself, explores, and reaches problem-solving while having fun.
- Unclear point: Does it contribute to the improvement of learning and academic ability?
- Difficult point: Teachers creating appropriate assignments and grasping the AI environment and proficiency of all students.

I would like to think about these issues little by little in this lecture.

[no.6]

I became a trustee this spring, and at the first board meeting, I received a booklet titled "Towards Liberal Arts in the AI Era: Commemorating the 30th Anniversary of Keiwa College" [1]. The current Board Chair Yamada, who was the president at the time of the 30th anniversary, wrote about the history of Keiwa Gakuen, etc., and I learned a lot. In the editor's postscript, it was written:

Today, following the scientific revolution of the 16th-17th centuries and the industrial revolution of the 19th century that practicalized its results, an information revolution starting from the computer development of the late 20th century is occurring. It is

expected that this will advance further in the 21st century, and social transformation based on the development of Artificial Intelligence (AI) will progress greatly in every field. The problem there is how humans and AI will coexist. Also, what becomes important there is to understand what a human being is, what human education is, and what higher education aims for within that. That is, the direction in which the future grand design of higher education should head. In this book, titled "Towards Liberal Arts in the AI Era," I tried to show the direction in which Keiwa College, one of the small local humanities colleges, should head.

I believe my request was based on this context, but this time, I received a request to lecture on the following four items.

1. The current status of AI evolution
2. How society will transition due to AI in the future
3. Where the significance of human existence will be sought within that context
4. The role of education in the AI era, particularly the mission that Christian education should fulfill

In the spring, at the Freshman Welcome Public Academic Lecture, I spoke a little about AI to students of Keiwa College, mainly first-year students. Since today is a training session, there is some common content, but I intend to talk a little more in-depth. In Liberal Arts, Critical Thinking is cherished, but since the nuance in Japanese is not very good, "listening while thinking autonomously" might be better.

I am not an AI expert, and the requested items are all difficult, so I cannot give adequate answers, but I hope we can think together. I will avoid technical matters and terminology as much as possible, or add explanations, and speak in general terms as much as possible. Still, many may feel that these are unfamiliar topics. I will also make an effort, but I hope you will listen while thinking autonomously.

(5:28)

## 1.2 Self-Introduction: High School Days

[no.7]

I hardly know any of you, and probably, you do not know me either. However, the path I have walked is inevitably reflected in the background of my way of thinking, so I would like to introduce myself in the hope that it will help you understand my lecture.

In the autumn of 1969, my first year of high school <sup>1</sup>, a campus dispute occurred. Some students, together with students from other schools, barricaded the area around the principal's office, and after that, discussions on political issues continued every day, police riot squads entered, and there were no classes for several months. We had many discussions. I asked myself, was asked by friends, and there are things I started to think about from around this time.

- A. What are the conditions for deciding to break the law to appeal against what is considered unreasonable?
- B. What if I had been born into a Muslim family or a Communist Party member's family?

The first is, what are the grounds or conditions for obstructing classes by even barricading when there is something considered unreasonable in society. I think this is a question related to war, and also connects to the question of what the people of Russia, Ukraine, Palestine, Hamas, and Myanmar should do.

The second. I grew up in a Christian home, was taught that its values were important, and grew up believing in them, but is there universality? It is a question of how to find values that should be shared with everyone and how to cooperate and live together.

I read about Vladimir Putin [3], who is one year older than me, before, and now I am reading the autobiography of Angela Merkel [4], who is one year younger than me. Eventually, I would like to learn about the lives of Xi Jinping, who is the same age, and Osama bin Laden, who is three or four years younger. This is because I feel it is easier to imagine their lives as we are living in the same era since our ages are close.

[no.8]

As the division among students widened due to the campus dispute, I began to attend church enthusiastically. There were many university students, and listening to their stories and acting together felt like stretching myself a little, and it was a time when my world suddenly expanded.

The pastor of that church <sup>2</sup> had been to Southeast Asia as a missionary during the war, and immediately after the war, as an "act of atonement" <sup>3</sup>, he built a Southeast Asian Student Dormitory and invited Asian war orphans and children born between Japanese soldiers and local women to Japan for study abroad and vocational training <sup>4</sup>.

---

<sup>1</sup>Monday, October 13, 1969

<sup>2</sup>Rev. Ryoichi Kato, Tokyo Ikebukuro Church, United Church of Christ in Japan. The pastor's wife, Asako, was also a relative of my father, and my parents attended that church.

<sup>3</sup>Reference: "Now is the Time for Atonement" [2]

<sup>4</sup>He also worked on difficult issues such as searching for fathers and acquiring nationality for many stateless children.

I want Japanese youth not to exhaust their energy in confusion, but to see Southeast Asia firsthand for the next era and have the opportunity to interact directly with Asian people.

He mentioned this occasionally, so we, the members of the youth group, decided to go to Southeast Asia. A shipping company close to the teacher<sup>5</sup> planned a tour where young people could board the empty cabins of cargo ships at a rate equivalent to youth hostels and travel around Asia, and seven of us, six university students and I, decided to participate.

For nearly a year after the trip was planned, I saved money by washing dishes, helping at inns, assembling parts at small factories, and selling typewriters as part-time jobs<sup>6</sup>. Looking back, although I had tough experiences in part-time jobs, I think I was able to learn various things.

(9:38)

### 1.3 53-Day Cargo Ship Trip to Southeast Asia

[no.9]

In the summer of 1970, my second year of high school, I went on a cargo ship trip.

The photo on the slide was taken at Honmoku Pier in Yokohama with the people seeing us off at the time of departure. The pastor's wife, her two daughters, the dormitory matron's grandson, and a trainee from Singapore are in the picture. This person is an orphan of the Singapore Chinese Massacre by the Japanese military.

[no.10]

It was a 53-day trip loading used bulldozers and machine tools from Japan, unloading them in Singapore and a free trade port called Penang in Malaysia, stopping at Balikpapan and Samarinda in Borneo, Indonesia<sup>7</sup>, loading Lauan timber, and unloading it in Busan, South Korea<sup>8</sup>.

---

<sup>5</sup>Oyama Kaiun: Grew from the 1960s centering on Southeast Asian routes, went bankrupt on August 21, 1975.

<sup>6</sup>The money paid to the shipping company was 72,000 yen. The starting salary was about 35,000 yen at that time. The hourly wage for high school students was about 100 to 180 yen. At the church, they gave me work using a Japanese typewriter for the weekly bulletin etc. as my part-time job, and held a bazaar to support me. My parents were worried, but in the end, they supported me. My father was a national civil servant (Ministry of Labor) at the time, had a mild physical disability, was not conscripted, and went to Indonesia for labor research as a civilian employee of the military (a person belonging to the military other than a soldier, working as a civil official, employee, servant, etc.), and had met the pastor in Indonesia, but due to his wartime experiences, he said he could not go to Southeast Asia himself.

<sup>7</sup>Currently called Kalimantan Island in Indonesia

<sup>8</sup>Leaving Honmoku Pier in Yokohama, next was Kobe Sannomiya Port (where we went to Osaka Expo 70, then next,) Hiroshima Ujina Port (from where we went to the Peace Memorial Park) for short stops, and then to Singapore. In Singapore, there was a branch

During the preparation period for the trip and during the trip, we held study sessions on the Bible, English, and Asia. We learned the history of Japan advancing into Asia under the pretext of liberating Asian people from Western colonies, using labor and resources like Japanese colonies, looting for the war, and the Japanese military controlling local people with armed force, including massacres. I felt the weight of war responsibility as a Japanese person and honestly became anxious about how to face Asian people <sup>9</sup>.

[no.11]

At the destinations, we visited churches and met various people. Many of the older people disliked Japanese people, held hatred, or were jealous of Japan's economic development <sup>10</sup>. Everyone lived very poor lives, and we met children trying to earn money in various ways <sup>11</sup> and young women who could not survive without providing sexual services <sup>12</sup>. However, seeing them living desperately, rather than going around apologizing for what the Japanese did, I came to think, "Isn't it important to live responsibly as someone living in the same time together?" It may not be a very good expression, but perhaps it means I was made to decide to "remember these people even if we live in different worlds, and live a life that is not shameful to these people" <sup>13</sup>.

---

of the Christian organization International Navigators, which the members were involved with, and in Penang, international students who had come to the Southeast Asian Student Dormitory had returned, so they took care of us, but in Balikpapan (where there was an oil refinery) and Samarinda (currently the capital of East Kalimantan province, but at that time a small port town up the river), we had absolutely no acquaintances, so we looked for a church. The unloading point for the timber was decided to be Busan around the time we left Samarinda.

<sup>9</sup>Since I had heard stories from the pastor, I had more knowledge than the general Japanese public, but information on Japanese war crimes in Asia was still limited, and I think there was a lot of vague information suggesting that they had done terrible things.

<sup>10</sup>It was somewhat true in Southeast Asia as well, but especially in South Korea at that time, almost everyone seemed to hate Japan.

<sup>11</sup>In Samarinda, a boy who came to the ship with his father helping with the work said he wanted my sandals. I said, "You probably have other shoes, I am barefoot." After hesitating quite a bit, when I tried to give him the sandals, he found the soles were peeling off a little and said he didn't want them because he couldn't sell them. The conversation was, of course, mostly gestures.

<sup>12</sup>Since docking fees are incurred, the ship basically anchored in the bay and only docked at the pier for loading and unloading cargo. Going ashore used barges (flat-bottomed small boats that shuttle cargo between large ships and land in rivers and ports). Then at night, people came on barges to sell various things, or call girls, or people with call girls came to arrange sexual services under the guise of massage. Some were quite young. My roommate, who could hardly speak English, barely managed to turn them away by telling them to go to the leader's room. I was a high school student who didn't even understand what these people did until explained later.

<sup>13</sup>I think the fact that my language skills were lacking and direct communication was limited is also behind this thinking. Since there were students from the Southeast Asian Student Dormitory attached to the church, I think I could have had deeper direct interaction if I had made the effort, but I couldn't at that time. I think it can be said that I was

This thought has influenced my decisions on what to cherish at various times in my life thereafter, such as thinking about living together with people I had been close to just before but ended up on different sides due to the division caused by the campus dispute. Of course, I have regrets too.

(12:23)

## 1.4 Subsequent Path of Living Together

[no.12]

After graduating from high school, I studied mathematics at university, studied abroad in the United States for about three years halfway through graduate school, and found employment at a local national university. Around the time I was experiencing the joy of concentrating on mathematics research, I moved to International Christian University, often called ICU, a Christian Liberal Arts university like Keiwa College.

From a little before moving to ICU, I had started supporting mathematics research at Asian universities <sup>14</sup>, but after moving to ICU, in addition to mathematics research and education, I planned activities not only domestically but also in China, Korea, the Philippines, Indonesia, Thailand, India, Kenya, etc., through student learning support to support students with various difficulties, support for people with disabilities, work camps in Thai hill tribe villages, and a program called Service Learning, sending students and accompanying them to learn together.

Partly due to students' wishes, we held discussion-style Bible study meetings at our on-campus home on Thursday nights, cherishing that anyone was welcome, and continued this for about 16 years until retirement. There were times when the number of people was small, but perhaps because my wife prepared tea and cakes, by the end, it had become a gathering of 20 to 30 people every week. I think many people felt it was a comfortable place where they could say anything, just listen to others, or just eat cake, drink tea, and chat silently. <sup>15</sup>

It is a place of learning, and perhaps a comfortable place with friends. I feel that something that can be called a "place of belonging" (ibasho) is important for people to learn and grow. For me, the time with the church and the youth group members was the "place of belonging" where I could grow. I wonder if our home was able to provide one of those "places of belonging". How about a "place of belonging" for you, and for the students of Keiwa Gakuen?

---

immature. Looking back at "Now is the Time for Atonement" [2], I knew a significant percentage of the international students, but there was no deep interaction.

<sup>14</sup>Centered on the Philippines and China. There was also a program supported by the Japan Society for the Promotion of Science with the Philippines.

<sup>15</sup>There is a record on the website <https://icu-hsuzuki.github.io/biblestudy/>. A Bible reading group via email has also continued since 2011. <https://icu-hsuzuki.github.io/science/bible/brc.html>

When I was a junior in college, a director of a children's home <sup>16</sup> asked me if I would like to work there, but he passed away from cancer soon after I went to study in the United States. The children's home was taken over by his wife, and since it was close to ICU, I became involved as a trustee.

This is after my retirement, but when elementary and junior high schools were closed due to COVID-19, I was asked to go to support children's learning every day during their study time, and there was a period when I looked after children who were behind in their studies afterwards. During COVID-19, the staff were having a very hard time, so I started doing night duty volunteer work to help, and although the frequency has decreased, I still continue to do so.

Also, I am currently helping at an employment support facility for people with disabilities <sup>17</sup>.

I have been teaching at universities all my life, but at children's homes, employment support facilities for people with disabilities, and domestic and international facilities I visit for Service Learning, etc., I have been able to meet many people who have walked paths completely different from mine. It is difficult to understand what is important to others. However, although it is not easy to understand, I have been made to learn firsthand that there are important things, and that each person's life is important, not a matter of superiority or inferiority, and those encounters have become "treasures" for me. I hope to have such encounters with you, and with the students here at Keiwa Gakuen.

(16:35)

## 2 Encounter with AlphaGo and Artificial Intelligence

### 2.1 The Shock of AlphaGo

I was taught Go by my grandfather when I was in elementary school and played with friends in junior high school. Although I do not play continuously, it can be said to be my only hobby.

[no.13]

In 2016, an event occurred where Google DeepMind's Artificial Intelligence (AI) defeated Lee Sedol, who had been a world champion many times. Actually, in chess, IBM's Deep Blue, an AI <sup>18</sup>, had defeated World Champion Garry Kasparov in 1996, and in Shogi, AI had reached a level where top professionals could not win around this time, but it was said that Go would still take time. I was also watching the broadcast, and it was a shock. It was a surprise not only that it won, but that it won by playing moves that were

---

<sup>16</sup>Child Welfare Facility Nozomi no Ie <https://www.nozomino-ie.or.jp>

<sup>17</sup>Japan Christian Workshop <https://jcws.or.jp/houjin/houjintop.html>

<sup>18</sup>At that time, it was not called AI, but often called a chess-playing expert system.

considered absolutely bad in human terms, that is, moves that seemed not to be on the extension of human thinking, several times. So, starting from an interview article with Demis Hassabis, who developed this AlphaGo, I began to investigate this person and his way of thinking.

(17:32)

## 2.2 Demis Hassabis

[no.14]

Demis Hassabis was born in London in 1976 to a father from Cyprus and a mother from Singapore. He learned chess at the age of 4, then led the British junior team and was active in world tournaments. At 17, he co-developed a simulation game called Theme Park <sup>19</sup>, founded a company, skipped two grades to study computer science at Cambridge University, and then studied neuroscience, which researches brain functions, at graduate school to obtain a Ph.D. He researched the hippocampus, which governs memory, and found that if the hippocampus shrinks and memory is impaired, it becomes difficult to imagine future events, thereby establishing that past memories are also related to responding to the future, and elucidated that mechanism. When IBM's computer defeated Garry Kasparov, he felt, "AI is not that great; Kasparov can do other things, but this AI can only play chess." He set a goal to develop Artificial General Intelligence (AGI). Since the English term is Artificial General Intelligence, taking its initials, it has recently been called AGI [?]. He thought he wanted to study the brain for that purpose, so he went to graduate school for neuroscience. When asked "Were you interested in the brain from before?", he replied, "When I went to graduate school, all I knew about the brain was that 'it is inside the skull'."

Actually, he started the company DeepMind in 2010, but he also says he couldn't pay salaries to employees for the first two years. However, first, he developed an AI that plays 49 types of arcade games found in game centers, such as Atari's Space Invaders and Breakout, 300 to 600 times with a single program, learning to get higher scores than humans, and this was recognized, leading to the acquisition by Google.

The next was Go, and in an interview immediately after winning the first game <sup>20</sup>, to the question "What do you expect for the future of AI?", he answered as follows:

What I'm really looking forward to is using this kind of AI for science to advance science faster. I want to see AI assisted science. An AI research assistant would practically do a lot of monotonous work, highlight interesting phenomena, find structures from vast amounts of data, and present them to human experts and sci-

---

<sup>19</sup>Later developed the AI department for Black & White, etc.

<sup>20</sup>Played 5 games: Win, Win, Win, Loss, Win

tists who can make breakthroughs more quickly.<sup>21</sup>

(20:32)

[no.15]

### 2.3 After AlphaGo

It was 2016 when AlphaGo defeated a top Go professional, but Google DeepMind announced AlphaGo Zero the following year. AlphaGo used games played by human professionals as data for training, but AlphaGo Zero did not use such data; it was taught only the rules and made to play against itself many times to learn. And with this technology, they showed that for games called perfect information games where luck is not involved, such as chess, shogi, Go, and Othello, basically using a single program, letting computers play against each other and reinforce/learn allows the creation of good AI. In fact, there were many chess and shogi AIs until then, but they provided an AI, AlphaZero, that overwhelmed them.

Actually, after this, they also developed MuZero<sup>22</sup>, a program that is not taught the objective of the game, but learns the objective while playing, and becomes stronger.

Usually, one would think that you read a lot of data learned by humans, teach the basics, and make it stronger, but what AlphaZero and MuZero did was to create a learning AI that learns while playing many times without being taught anything as long as it is a game that satisfies basic conditions, and becomes stronger than humans. Such learning is called deep reinforcement learning, and they provided a wonderful example of its success.

Games are, of course, not only these kinds of things. By using a game as a model, one considers what is necessary to master that game and what other problem solutions it connects to. Or conversely, when solving a certain type of task, the technology required for it is likened to the strategy of a specific game that serves as a model, or such a game is created, and its strategy is considered.

(22:50)

[no.16]

### 2.4 From Education to Learning

In pedagogy, the slogan "from teaching to learning" has probably been said for quite a long time, but in Japanese university education as well, it has been said "from education to learning" since around the 2000 education reform.<sup>23</sup>

---

<sup>21</sup>Article: <https://www.theverge.com/2016/3/10/11192774/demis-hassabis-interview-alphago-google-deepmind-ai>, Translated article: <https://gigazine.net/news/20160311-demis-hassabis-talk-ai/>

<sup>22</sup>MuZero: Mastering Go, chess, shogi, and Atari without rules, (2020.12.20): <https://deepmind.google/discover/blog/muzero-mastering-go-chess-shogi-and-atari-without-rules/>

<sup>23</sup>Report on Measures to Enrich Student Life at Universities - Aiming for University Creation from the Student's Perspective - (Commonly known as the Hironaka Report): [https://www.mext.go.jp/b\\_menu/shingi/chousa/koutou/012/toushin/000601.htm](https://www.mext.go.jp/b_menu/shingi/chousa/koutou/012/toushin/000601.htm)

However, specific methods on how to realize this seem not to have progressed much. Although it is said that whether a teacher is good at teaching should be measured by whether student learning is promoted.

I was the FD (Faculty Development) director (responsible for educational improvement of faculty) for two years from 2003. At that time, I was taught by a professor about differences due to the cultural background of teachers. He said that a good teacher in Europe values theory and explains logically, a good teacher in America shows data and explains inductively, the UK is in between, and in Asia, what is considered good is a humanly good teacher. I think theory, being based on data, and character are all important. Regarding AI, America is overwhelmingly dominant at present, followed by the UK, and recently China is growing, but Japan seems to have lagged behind. In Europe, there is a movement to impose regulations. Are the differences in what is cherished under each cultural background appearing?

I mentioned learning from the story of Go AI, but actually recently, a top Japanese Go professional said, "Recently, top professional level Go players have become stronger than the AlphaGo that defeated Lee Sedol." In other words, by using strong Go AI to learn, humans are becoming incomparably stronger than before. Don't you think this is also a wonderful thing? To borrow Demis Hassabis's phrase, if you use an AI research assistant well to study Go, you can become stronger and stronger. Other top professionals also say, "The latest AI is too strong, and even if I study why it plays in such a place, I can hardly understand it."

The Go AI AlphaGo that shocked me was in 2016, but since I was to reach retirement age in March 2019, I planned to study AI and data science, which is responsible for AI thinking, from then on. Although I will not do development, I was convinced that it is a period of great transformation in how AI affects society and how society and learning will change due to this AI. Of course, including both good and bad things.

(26:00)

### 3 Progress of Artificial Intelligence (AI)

#### 3.1 Turing Test:

[no.17]

To know about AI, it is best to touch it first, but since what can be understood in a short time is limited, and in the midst of rapid evolution, touching a specific AI a little will not make you understand, and individual differences seem to be large. Therefore, I would like to think from "What is Artificial Intelligence (AI)?" and "What is intelligence?"

Actually, when I was a student, in the 1970s, artificial intelligence was already being considered, and I also learned a little about artificial intelligence. What you learn first was the Turing Test.

In the Turing Test, a human questioner conducts a text-only dialogue with two parties, one "human" and the other "machine (AI)". If the questioner cannot distinguish between the machine and the human, that machine is considered to be a "machine that is intelligent (AI)".

The Turing Test takes the stance that "intelligence is something that can be judged by observed behavior," and is based on the idea that behaving "intelligently" when viewed from the outside is more important than whether there is internal consciousness. It can be said to be a lineage of behaviorism, which relates to behavioral psychology, philosophy, and mathematical logic's logical positivism, which took what can be observed from behavior as the object of research without asking what the mind is.

It is also the background for current AI designed aiming for "human-like conversation". The Turing Test uses text-only dialogue to make verification easy, but if we expand this,

Artificial Intelligence (AI) is a technology or research field that attempts to make machines imitate human intellectual functions (recognition, learning, inference, planning, judgment, dialogue).

It might be said so.

[no.18]

Before moving forward, I will comment a little on the paper discussing the Turing Test. This is in "Computing Machinery and Intelligence" [10] by British mathematician and logician Alan Turing in 1950, starting with the question "Can machines think?". Starting from responding to criticisms of this question, in the last section, considering human learning which has an innate brain and learns through accumulation of empirical learning, regarding designing a "machine that acquires intelligence through learning," he states:

Instead of trying to produce a programme to simulate the adult mind, why not rather try to produce one which simulates the child's? If this were then subjected to an appropriate course of education one would obtain the adult brain.

He suggests that it is better to create a simple machine like a child and let it grow through education (learning/training). In current artificial intelligence development, technologies related to learning and education such as reinforcement learning, which I talked about in AlphaGo, and Learning Systems, which I will talk about later, are key. While the completion of artificial intelligence under the design philosophy shown by Turing seems still far away, when considering value judgments that cannot be entrusted to AI and responsibilities to society, I believe this design philosophy touches on the essential part.

In the same paper, Turing predicted that artificial intelligence clearing the Turing Test would be created in about 50 years (2000). If Turing saw the current ones, would he be surprised, or would he say it is as expected?

Please refer to the links for records of exchanges asking GPT5 about the Turing Test [18], what intelligence is considered to be [19], and the difference between human intelligence and AI intelligence [20].

Turing Test, Understanding of AI knowledge, Human limitations and Artificial Intelligence ethics

(30:16)

## 3.2 Nobel Prize in Physics / Nobel Prize in Chemistry

Two Japanese people received Nobel Prizes this year as well <sup>24</sup>, but do you know about last year's, the 2024 Nobel Prize in Physics and Chemistry? <sup>25 26</sup>. The 2024 Nobel Prize in Physics laureates were Geoffrey Hinton and John J. Hopfield, and the Nobel Prize in Chemistry laureates were David Baker, Demis Hassabis, and John Jumper. The name of Mr. Demis Hassabis, whom I have been talking about, is also included. Actually, all five received the awards for research related to AI. I think many people, including those involved, were surprised.

[no.19]

(30:56)

## 3.3 Evolution and Current Status of AI

### 3.3.1 Development of Image Recognition, Image Generation

Since when has AI been making explosive progress? Looking from the time of Turing's paper in 1950, technological innovation in computers themselves, what is usually called hardware, lies behind the progress. Due to this, our surrounding environment has also changed dramatically. Windows 95 was released in 1995, as the name suggests; from around this time, individuals could own computers, and the era of personal computers (PCs) arrived. In step with this, computer games appeared, with the NES in 1983, PlayStation in 1994, Xbox in 2001, and game consoles and software were actively developed, and technological innovation in software fields responsible for programs and images also progressed. Mobile phones themselves seem to have

<sup>24</sup>For the 2025 Nobel Prize in Physiology or Medicine, Shimon Sakaguchi, Specially Appointed Professor at Osaka University, and for the Chemistry Prize, Susumu Kitagawa, Distinguished Professor at Kyoto University, were selected respectively along with joint researchers.

<sup>25</sup>The Nobel Peace Prize was awarded to the Japan Confederation of A- and H-Bomb Sufferers Organizations (Nihon Hidankyo).

<sup>26</sup>Nobel Prize <https://www.nobelprize.org> · Physics Prize <https://www.nobelprize.org/prizes/physics/2024/summary/> · Chemistry Prize <https://www.nobelprize.org/prizes/chemistry/2024/summary/>

existed since Turing's time, but around 2000, feature phones called "Galapagos phones" in Japan, and with the appearance of smartphones in 2007, they spread rapidly. These are also closely related to the technological innovation behind the progress of AI.

[no.21]

However, personally, I think the basic technology of AI started to advance rapidly around 2012, when human-equivalent levels were achieved in MNIST recognition by applying neural networks that imitate the mechanism of information transmission in the human brain. This was achieved by a team including Geoffrey Hinton utilizing an improved version of the associative neural networks proposed by John J. Hopfield, who won the Nobel Prize in Physics. Since the person in the lab next to mine was doing research on image recognition, I was watching presentations of related research in graduation theses and master's theses. I thought there was still a long way to go, but visible changes began to appear rapidly around this time.

MNIST <sup>27</sup> is a standard test dataset to check if recognition can be done with the same accuracy as humans on 10,000 images using the results learned from 60,000 images, out of 70,000 image data of handwritten numbers recognizable by humans drawn with  $28 \times 28 = 784$  points. Since it is a 256-level Gray Scale, the total information amount is  $256^{784}$  ways, that is, a vast amount of about  $10^{1888}$  ways. Since absolute judgment cannot be made for such patterns like "this is 2" or "this is 7", a calculation formula is created to find characteristic patterns and read the black and white status of points to judge, training it to make the same judgments as humans. We use what is called a neural network in creating the judgment calculation formula. Furthermore, to perform such simple but extremely numerous calculations, the GPU (Graphics Processing Unit), which was developed to display images on game consoles, came to be used effectively. Along with this, it seems that the stock prices of companies that designed/developed or manufactured them are rising <sup>28</sup>.

[no.22]

[no.23]

What is important is "finding a certain pattern from a vast amount of information and increasing the probability of judgment based on it." Since absolute judgment is impossible for handwritten characters, it can be said that accuracy has been improved by incorporating probability into judgment, saying this possibility is high.

As you may know from Google Photos etc., photos are classified by face, and facial recognition is also used at airport immigration and for My Number Card health insurance cards.

Furthermore, generating new images and videos has also been progressing since around 2021 and 2022. Classification and generation might feel quite different, but actually, starting from judging by a certain pattern, using that pattern conversely leads to being able to generate things that are similar but

---

<sup>27</sup>Modified National Institute of Standards and Technology database

<sup>28</sup>Designed by NVIDIA, manufactured by TSMC etc.

different.

### 3.3.2 Revolution in Natural Language Processing (NLP)

[no.24]

Another thing that seems very important is the revolution in natural language processing. The Transformer, which young researchers at Google announced and released so anyone could use <sup>29</sup>, and BERT developed also at Google <sup>30</sup>—it is reported that Geoffrey Hinton, who won the Nobel Prize in Physics this time and is also called the Godfather of AI, was involved in the background. Meaning understanding has deepened, and accuracy in translation etc., including multilingualization, has improved dramatically.

With Transformer-related technology, it has become possible to calculate the probability of appropriate words filling a hidden part of a sentence. For example, if there is

I am a  of Keiwa Gakuen.

various words can enter. "Student," "pupil," "teacher," "staff" are likely possibilities. "Trustee" or "AI" are also possibilities, but likely not very high. If it is "history," there is almost no possibility, but by making it "history," the preceding and following parts would be quite limited. Conversely, if the context is shown, especially if there is vast information behind it, it will be possible to narrow it down further. Furthermore, it becomes possible to identify what demonstrative pronouns refer to, here who "I" means, with very high accuracy. Actually, just like in image recognition, by analyzing the pattern of sentence structure, it has become possible to generate sentences that are similar but different.

Of course, the fact that linguistic theory has been organized is also contributing greatly to this background. Basically, it can be said that everything is used for AI development. In a sense, it is the crystallization of Liberal Arts.

Because it became able to use language, in versions after GPT4.0 [14], the successor to ChatGPT, it has become an AI like an intelligent conversation partner that answers in very natural language no matter which language you ask in. Do you know what GPT stands for? It means Generative Pre-trained Transformer, using the technology of generative pre-trained Transformer. Models that have become able to use natural language are increasingly called LLMs (large language models).

The ability to handle our language, called natural language, is very important; for example, to operate a computer, one first had to learn a language

---

<sup>29</sup>Attention Is All You Need, 2017 [11]

<sup>30</sup>BERT: Bidirectional Encoder Representations from Transformers. Designed to pre-train sentences from both the beginning and the end, using a method to list words related to hidden words with probabilities, it is a very high-precision NLP (Natural Language Processing) model that further advanced meaning understanding, 2018) [12]

that the computer could understand, but the reduction of that necessity is having a revolutionary impact on the field of programming as well. (38:28)

### 3.3.3 Reinforcement Learning

As explained regarding AlphaGo (2016) etc.<sup>31</sup>, AI has become able to learn by itself in changing situations. Until now, the human who gave the initial data or taught the way of thinking was always the teacher, but AI learns by itself and conversely has come to teach humans.

However, while it is fine for limited objectives like Go, when trying to apply it to economic or social systems, it has become known that there is a drawback that it requires vast computer resources and energy to learn by itself. For example, even if it is possible to research effective countermeasures for global warming with AI, it uses a lot of energy and water resources for cooling, which conversely accelerates global warming and environmental destruction.

Perhaps we are at a stage where AI itself is acquiring more appropriate and smart ways of learning that also consider energy saving. Demis Hassabis says that developing AI that plans to solve challenges is the current goal. (39:40)

### 3.3.4 Expansion of Application to Real Society

The application of AI to real society is also progressing rapidly. Autonomous driving, application to finance known as FinTech<sup>32</sup>, Robotics, etc. The "lack of Embodiment" is also being discussed. That also seems to be progressing rapidly utilizing AI in robot applications. Since I am unstudied and I think it will take a little more time, I cannot talk about this this time, but it is certain that groundbreaking progress is being made.

The award for Demis Hassabis and his team for the Nobel Prize in Chemistry this time was given for their contribution to protein structure prediction by the improved version of AlphaFold (AlphaFold 2)<sup>33</sup>. Living organisms can basically be said to be made of proteins, which are composed of relatively small molecules called amino acids. However, unless it is determined what shape they actually take, which is called the 3D structure, reactions with other proteins cannot be considered, so the 3D structure of proteins is considered basic information. Since around 1950, it has been said that if this is known, it can contribute greatly to medicine, such as the treatment

<sup>31</sup>AlphaGo (2016), AlphaGoZero (2017), AlphaZero (2017), MuZero (2019) ([5, 6, 7, 9])

<sup>32</sup>A word combining Finance and Technology, new services and businesses linking financial services and information technology

<sup>33</sup>AlphaFold 3, which specifies interactions of proteins etc., has also been released. <https://blog.google/technology/ai/google-deepmind-isomorphic-alphafold-3-ai-model/>

[no.25]

[no.26]

of intractable diseases through the development of chemistry and drugs, so many researchers took on the challenge, but it was difficult to achieve.

It seems Demis Hassabis became interested in this problem when he heard other students talking passionately about it during tea time in his student days. And seeing AlphaGo thinking for itself and playing wonderful moves that humans could not think of until then, and because the types of structures to be searched to determine the 3D structure were similar to the case of Go, he thought this would also solve this protein problem <sup>34</sup>, started this research next to Go, solved the problem almost perfectly, and provided the protein 3D structure database free of charge. Thus, it resulted in a joint Nobel Prize in Chemistry with John Jumper, who made significant technical contributions.

Actually, another winner of the Nobel Prize in Chemistry, David Baker, was researching synthesizing new proteins conversely using this information, but this person also developed a computer game called Fold.it <sup>35</sup>, and had game participants think while playing the game, trying to utilize those ideas for research.

This is a summary of what I asked AI about [Evolution and Current Status of AI](#) [22].

[no.27]

## History of Recent AI Evolution (2010s - 2025)

- 2012: With Deep Learning (technical improvements such as neural networks), image recognition technology improved remarkably, making it possible to extract similar patterns from complex structures.
- 2014-2016: Became possible to generate different things by specifying certain similar elements. Also, reinforcement learning by DeepMind, used for AlphaGo etc., evolved.
- 2017: Natural language understanding evolved with the appearance and improvement of Transformer, and performance in meaning understanding, translation, summarization, and generation improved dramatically.
- 2018-2020: Birth of Large Language Models (LLM): Appearance of GPT (OpenAI), BERT (Google).
- 2021-2023: Generative AI boom and Multimodalization (handling multiple things like language and images): GPT-3 (2020, released 2021), ChatGPT (Nov 2022). Determination of protein 3D structure by AlphaFold (DeepMind).

---

<sup>34</sup>Go has about  $10^{150}$  possibilities of positions, and the fact that this problem was also a problem of determining the correct 3D structure from among almost the same possibilities seems to be in the background.

<sup>35</sup><https://fold.it>

- 2024-2025: With the evolution of Generative AI, Agent-type AI that automates tasks by instructing AI appeared, and safety and regulation became international issues.

(42:22)

### 3.4 Road to Artificial General Intelligence (AGI)

[no.28]

I will talk a little about the road to Artificial General Intelligence (AGI). This is what many AI researchers are currently aiming for, and several cutting-edge developers are saying that AGI will likely be created in a few years.[17]

Actually, the definition of AGI is ambiguous. It is generally said to be "an artificial system that can understand, learn, and execute broad intellectual tasks equal to or better than humans." Since "what is human" is a question considered since ancient times, standards to measure "equal to or better than" cannot be established. However, Google and Open AI have tentatively stated definitions of AGI.

- Google DeepMind: "Artificial systems capable of autonomously learning and reasoning about the world as flexibly as humans."
- OpenAI: "A system that can perform at or above human-level performance across the majority of economically valuable tasks."

More specifically, systems with the following capabilities seem to be considered.

- Intelligence across multiple fields (multimodal): Can handle language, logic, creation, emotion understanding <sup>36</sup>, physical coordination <sup>37</sup> cross-sectionally.
- Self-learning/Self-improvement capability (autonomous): Can acquire new skills from experience without human instruction.
- Contextual understanding: Can act and judge based on situations, values, and social contexts.
- Formation of motivation and intent: Can form not only objectives given from outside but also self-objectives (why do it).

(43:53)

## 4 Evolution of AI and Social Change

### 4.1 How to Deal with It, What is Danger

[no.29]

#### 4.1.1 Will AI Dominate Humans? What Can AI Not Do?

AI technology is advancing rapidly. And as I mentioned earlier, one of the Nobel Physics Prize winners, Geoffrey Hinton, seeing AI that learns independently leaving the hands of AI designers as reinforcement learning technology advanced with Alpha Zero etc., stated that there is a possibility that AI will conversely come to dominate humans, left Google two years ago, moved his base to a university, and has come to advocate the dangers of AI.

On the other hand, I also see articles where various intellectuals discuss what humans can do that AI cannot. Personally, I question asserting that this is something only humans can do regarding specific things while even genius humans can hardly understand the possibilities and limitations of AI yet. I think no one in the world can predict what society will be like 20 years from now <sup>38</sup>. It can be said to be a terrible era.

Since it is evolving too fast, here, considering the realistic aspects of AGI mentioned earlier, I would like to think under the assumption that technical aspects will be achieved in a few years.

(42:10)

#### 4.1.2 Utility is Being Verified Explosively in Various Fields, Stopping is Inappropriate!?

About two years ago, because the development speed was too fast and the dangers were unknown, there was even a discussion that development should be stopped for a certain period, and people including prominent AI researchers signed and issued a declaration <sup>39</sup>. I actually thought so too, but presumably, it is impossible to stop progress with such things.

Utility and urgency exist in various fields. Sinkholes are occurring due to the deterioration of sewer pipes, but humans checking the degree of deterioration diligently cannot keep up at all, and efforts to use AI seem to be progressing in Japan as well. With people suffering from intractable diseases wanting medicine as soon as possible, or considering if disasters can be predicted to suppress damage to reduce people suffering from disasters even

<sup>36</sup>Meaning understanding emotions like pain, sadness, and joy by observing humans feeling them and understanding from their behavior is possible

<sup>37</sup>Understanding the relationship between body movements and other senses

<sup>38</sup>Historian Yuval Noah Harari also advocates similar things ("History has seen existences like Mr. Trump, but there was no AI") Historian Harari talks about the danger of AI Prescription for humanity [Yuval Noah Harari] [Hodo Station Uncut] YouTube: [https://www.youtube.com/watch?v=1CFbZ-1\\_HFQ](https://www.youtube.com/watch?v=1CFbZ-1_HFQ).

<sup>39</sup>Pause Giant AI Experiments: An Open Letter: [https://en.wikipedia.org/wiki/Pause\\_Giant\\_AI\\_Experiments:\\_An\\_Open\\_Letter](https://en.wikipedia.org/wiki/Pause_Giant_AI_Experiments:_An_Open_Letter)

a little, development cannot be taken a break while there are people facing various challenges.

Of course, many existing dangers are also being advocated. Theft and stalking incidents using smart tags like AirTag for loss prevention <sup>40</sup> were recently reported, and besides, various recommendation (showing "recommended for you") functions and information diffusion on SNS might hinder diversity and lead to the division of small groups. It might also be raised that media edited involving many people declines, and judgment of whether information is reliable or fake news becomes increasingly difficult.

(46:55)

## 4.2 Regarding Risks, We Don't Even Know What is Dangerous Well

Then, how should we face it? During the Industrial Revolution, smog pollution in London etc. seems to have occurred relatively quickly, but no one probably foresaw that they would possess colonies to obtain raw materials cheaply and expand markets for the subsequent development of the market economy, expand, cause world wars, and further lead to global warming. This time it is an Information/Intelligence revolution, so it might be more complex.

First, the fact that something becomes possible always has two sides. This is called the challenge of dual use, and it is something that has appeared frequently in history. In a famous instance, the ammonia synthesis technology called the Haber-Bosch process was created, enabling the production of nitrogen-based fertilizers in factories, causing an agricultural revolution and reducing starvation, while at the same time, the production of powerful bombs accelerated using the same technology <sup>41</sup>. Things developed as insecticides came to be used for chemical weapons. Sarin is one of them. And it was actually used for massacres in concentration camps, and the subway sarin incident also occurred in Japan. Peaceful use of nuclear power and atomic bombs might be similar. You all use the Internet, but this was originally for military use, and even now, it is also seen as a means to secure military superiority.

Looking at recent interview articles, leaders of Japanese semiconductor development companies and Demis Hassabis said that next, we will probably go out into space. Vacuum, zero gravity, and unknown worlds with technical utility must be attractive. Honestly, I feel new dangers.

I think, first, we should have the recognition that we understand almost

---

<sup>40</sup>Because they have a function to grasp location information remotely via smartphones etc., while they prevent loss, there is a risk of being attached to cars or bags without permission and location information being grasped.

<sup>41</sup>Applying the same technology enabled the synthesis of raw materials for explosives (TNT, gunpowder, etc.), utilized for weapon manufacturing in World War I and II.

nothing and continue learning, and second, rather than emphasizing only either utility or danger, we should calmly and responsibly learn that there are always both sides and many things are difficult to judge. Also, despite not knowing the impact on the whole, humans are weak to the sense that it is useful, leads to improvement, convenient, or profitable, and tend to make value judgments self-centeredly, so valuing the perspective of others, thinking that it might be dangerous for someone, each person involved should decide responsibly. Probably, it is necessary not only for engineers but for many people to be involved and think, and things like international agreements are also necessary. It is very difficult, though.

What do you think? This might also be a problem to think about in cooperation with AI.

(50:10)

### 4.3 Challenges and Risks Brought by AGI:

[no.30]

I asked AI about the challenges and risks brought by AGI, and here is what I summarized from its response.<sup>[23]</sup> <sup>42</sup> It seems to suggest several important things.

#### Challenges:

- Understand that "understanding each other" is extremely difficult, pay sufficient attention to "human weakness," and be careful of "coercion by power."
- Insight into "diverse singularities" rather than "universality" or "unification of correctness," and cherish "multidimensional justice."
- Cherish humans who "find value in existing" rather than "useful humans," and create "places to live together."
- Cherish what is nurtured while exploring how to cultivate "trust relationships" rather than "control" or "leadership," sharing uncertainty, and showing vulnerability to each other.
  - Technical trust: Transparency, explainability, ethical guarantee
  - Social trust: Common experience, stories, history of collaboration
  - Existential trust: Sharing weakness and uncertainty, determination to head toward the unknown together

"Difference in roles/Complementation: Rather than creating 'human-like AGI', perhaps true progress is 'humans understanding themselves through differences with AGI'." was written.

---

<sup>42</sup>Since it was generated through chat (dialogue with AI) with me, the same answer cannot always be obtained for a similar question.

- Social: Restructuring of employment/labor and concentration of wealth and power

AGI makes substitute for much of intellectual/creative labor possible, and job loss/reallocation occurs even in areas considered "only humans can do" (education <sup>43</sup>, medicine, legal affairs, arts, etc.)

- Psychological/Cultural: "Regression of thinking" and problem of dependence <sup>44</sup>

Homogenization of language/culture: Decline of regionality, minority cultures, non-mainstream languages. Danger of losing inefficient but rich human diversity such as poetry, dialects, oral culture

- Political/Ethical: AGI is operated integrally by states and companies, making "prediction" and "induction" of human behavior, thinking, and emotions possible

Responsibility <sup>45</sup> : When AGI makes autonomous judgments, if erroneous decisions occur, who takes "responsibility"—developer, user, or system—becomes unclear.

- Impact in tragedies such as war <sup>46</sup>

It was written, "The negative impact of AGI is not 'technology running out of control' but side effects caused by humans abandoning their own freedom, diversity, and meaning."

First, it seems to say that the challenge is how to understand diversity, cultivate trust relationships, create places to live together, and understanding the difference in roles between humans and AI is the very challenge. And it suggests the possibility of expanding distortions in human individuals and society.

(51:41)

## 5 AI and Christian Education

### 5.1 Duolingo

I introduced this to students in the spring, but I am studying foreign languages using an app called Duolingo. I am learning Chinese in English and

---

<sup>43</sup>We will consider this in the next section

<sup>44</sup>Important issue regarding education/learning

<sup>45</sup>Should be considered at the individual level as well

<sup>46</sup>International agreement is a very difficult challenge, but it is essential for many people to cooperate and act

simultaneously learning English in Chinese. Because I believe language does not improve unless used daily. Actually, it is a measure against senility.

Levels corresponding to CEFR, the Common European Framework of Reference for Languages, are also displayed, and it is said that about 10 million people worldwide have been learning continuously every day for over a year.

Here are the features.

- Like a game, one can learn the four skills of reading, writing, listening, and speaking with fun, and progress is visible, devised for continuous learning.
- Review weak problems, learn at one's own pace, and encourage each other with friends.
- The personalities of the appearing main characters<sup>47</sup> are distinct, and they speak with the same voice quality and tone in any language.
- Gender minorities also appear. (Example: his husband, her wife, etc.)
- Basically free. If continued to some extent, paid benefits can be used with friends for a certain period.

Duolingo: Our mission is to develop the best education in the world to make it universally available.

The basic parts are free, and it seems reducing educational disparity is also considered; currently, 8 languages<sup>48</sup> from Japanese, and 40 languages from English, etc., a considerable number of languages can be learned according to interest. Not aiming only at language, although still in the testing stage, they also provide learning for math, music, and chess.

The simultaneous interpretation function of AI will improve more and more. In that context, in language learning, why learn and what to learn. I am paying attention to it considering it as one evidence that efforts related to the essence of education are progressing utilizing AI. I think the time has come to think without being bound by conventional ideas.

(53:53)

## 5.2 Education / Learning

[no.33]

I think education is what orients learning, but when considering education in the AI era, we should cherish what humans must do and cannot entrust to AI, and I think there are two things. Value judgment and taking responsibility.

---

<sup>47</sup>About 8 people: Duo, Junior, Bea, Lucy, Zari, Lily, Oscar, Eddy, Vikram, Lin

<sup>48</sup>English, Korean, Chinese, French, Spanish, German, Italian, Portuguese

Value judgment, such as whether it is okay to hurt or kill others. Also, taking responsibility, such as who bears the responsibility when an accident occurs in autonomous driving.

Regarding value judgment, RLHF (Reinforcement Learning from Human Feedback), a type of learning system largely adopted in GPT4.0, avoids problems by incorporating data into AI, for example, "do not teach how to commit murder." However, this requires inputting various bad ideas and avoiding them, and comments have appeared criticizing the fact that people in developing countries who understand English were exploited to create this data.<sup>[16]</sup> At the same time, even if such things are done, it is impossible to teach ethical content to AI perfectly. Also, there may be cases where value judgments differ by individual or society. Including that, ultimately, it is necessary to make value judgments including ethics not by AI ethics education but on the side of humans using it.

Responsibility is also a difficult problem, and it is natural to not want to take responsibility if possible. There is a question of whether AI developers or businesses incorporating it into some apps have responsibility, but first and foremost, I think it is a problem that humans should take the lead in considering, including the degree of responsibility. AI that explains that clearly and with transparency will also become necessary. Under cooperation with AI, it is necessary to think and agree on in what cases, how, who, and to what extent responsibility is taken.

Here, what must be confirmed is that humans make mistakes, and at the same time, no matter how much AI advances, it also makes mistakes.

Some of you may have heard the word Hallucination (delusion/illusion). Simply put, AI "lies." Regarding this cause, four people from Open AI also wrote in a paper <sup>[15]</sup>. Since AI calculates evaluation by probability and selects the one with the high score for which response to make, it answers something plausible even when there is no certain answer, or mistakes occur due to deficiencies in evaluation criteria or data<sup>49</sup>.

I think there is a big problem where we feel we understand when AI gives a neatly summarized response. However, at the same time, it is also true that we can question further and explore in cooperation with others. Honing this skill will also be important.

(57:04)

### 5.3 Future Construction of Education:

[no.34]

As I have stated many times, I think no one understands education in the AGI (era where satisfactory artificial general intelligence appears) era yet. However, I summarized the main points from what I obtained by asking AI. <sup>[24]</sup>

---

<sup>49</sup> Japanese explanation is also available, so if you are interested, please read it.

Changes in Education/Learning: Correspond to changes by AGI in human activities of "knowing," "thinking," and "creating," and think not "what AI can substitute" but "what humans should undertake" and "how to collaborate with AI." Is it developing the power to ask? Teachers can be said to be not existences teaching knowledge but existences encouraging asking and advising.

1. "Learning how to learn" rather than "knowledge itself": Examine sources/grounds/biases, grasp the limits of one's own understanding, obtain AI's help, verbalize judgments/values and reflect, look back on the learning process, and explore other perspectives.
2. Creative thinking and expressiveness: Since AI is not good at "creation of new values" and "discovery of meaning," explore diverse expressions of real-world challenges such as language/video/apps/art together with AI, verify the problem setting itself, review, and clarify the grounds for decisions and value judgments.
3. Ethics, Philosophy, Social Responsibility: Understand diverse standpoints and individual dignity (including pain, suffering, joy), and emphasize places where each person thinks and discusses what kind of society and what kind of life to aim for.
4. Ability to cultivate collaboration and trust relationships: While doing global learning via AI, promote cross-cultural understanding, and cultivate the power to build trust relationships through empathy, dialogue, and adjustment while thinking together with others while interacting.
5. Basic Literacy + Digital/AI Literacy: Understand AI's thinking habits based on data, and think together with AI about "structural understanding" of society and how to "apply" it.

To avoid humans depending on AI and stopping thinking, create a fun world of learning suited to each individual together with AI, recognize diverse individual values, think, communicate what was explored, and think about a society living together in each field and integrally.

(58:17)

## 5.4 AI Education and Christianity

[no.35]

I would like to think a little about Christian education. The name of the school, Keiwa, seems to have been taken from the following scripture etc.

"Which commandment is the first of all?" Jesus answered, "The first is, 'Hear, O Israel: the Lord our God, the Lord is one; you shall love the Lord your God with all your heart, and with all your

soul, and with all your mind, and with all your strength.' The second is this, 'You shall love your neighbor as yourself.' There is no other commandment greater than these." (Mark 12:28b-31 Common Bible)

I understand that the name of the school "Keiwa" was taken by understanding "Love God" and "Love Neighbor" as Respect (Kei) God and Harmonize (Wa) with neighbors.

Reading the scripture passage, although the question asks "What is the first commandment?", Jesus seems to answer two, "The first commandment is" and "The second commandment is." It can be understood as two instead of one, but it can also be considered that loving God and loving neighbors are connected. I am thinking that it can be said:

Cherishing the One who is precious is cherishing the precious people of the One who is precious.

People who can cherish any neighbor are fine with that, but there are cases where it doesn't go that way. Here, if you cherish God, just as you are precious to God, your neighbors are also each precious to that God, so it seems to say, if you cherish God, please cherish your neighbors who are precious to God.

There may be those who say they do not have Christian faith. How about starting by understanding it as:

Cherishing your precious person is cherishing the precious person of your precious person.

I think the people you cherish will expand little by little from yourself. I hope that by doing so, it leads to harmonizing with each other even with people you have a little resistance to.

The Greek word for love is agapao, and its original meaning is Welcome. It is good if we can welcome others/neighbors, but there are cases where it is difficult. At that time, I think there are times when we have to keep a little distance, but I want to keep the heart of "please teach me about you" even at that time. Because we do not know that person's background or how God loves them.

I also had a dialogue with AI about AI education and Christian education, so I will summarize it a little. [25]

AI education at Christian schools should not be mere technical education but education that asks "what is a human being" and "what is a good way of living." Even in the new era brought by AI, isn't it important not to lose sight of human value and responsibility and aim for the construction of a society based on love and ethics?

I said that what humans should do is value judgment and responsibility. I think it can be said that AI is also a gift of reason (human wisdom and creativity) given by God. To utilize it appropriately, it should be possible to understand and strengthen the importance of "value judgment" and "action based on love and ethics" that humans should bear, and pursue the possibility of concretely practicing neighborly love such as support for the socially vulnerable and environmental protection. The place of Christian education is a place that can provide deep understanding and practice based on human value, responsibility, and love, and through concrete examples, it may become a place where one can realize "why learn AI."

**Christian Bots:** Since Christianity has fixed basic documents and orthodox doctrinal interpretations are relatively organized, I thought there would be interactive AIs, ChatBots, that can show grounds, and when I searched, I found that there are many. Although I think they are not official, there are completely free ones for general Christians for Catholics, US Anglican denominations, and Protestants, and they seem to be increasing.<sup>50</sup>

(1:02:57)

[no.36]

## 6 Summary

### 6.1 Why don't you try using AI

Today, I talked about things related to AI, but I did not talk about specific usage. However, since I want you to try using AI, I will write a few proposals.

First, for those who have never used AI at all, or those who have touched ChatGPT or Gemini which is easy to use from Google but don't know others well, I think Poe is good. You can try using various AIs. Next is Open AI's ChatGPT; currently, you can use GPT5.1. And Google Gemini 3. It became available recently.

### 6.2 What I did not talk about

Since I believe "convenience will be weeded out," after hesitation, I decided not to introduce convenient usage, but I will list a few.

First, Google Notebook LM. Since it can be used with your own data at hand, grounds can be clarified, so I think it is beneficial, but it becomes paid when using a lot of data.<sup>51</sup>

---

<sup>50</sup>Catholic: <https://www.magisterium.com/ja>, For US Anglican denomination The Episcopal Church: AskCathy <https://www.episcobot.com>

<sup>51</sup>It is unclear how far it can be used with Keiwa Gakuen's contract, and I do not think this is the definitive version.

Modes for learning without giving answers immediately, such as ChatGPT's [Study Mode](#) and Guided Learning Mode selectable from Gemini's Tools, are also provided.

Another is [Google AI Studio](#). Using this, you can try professional settings. Work here is supposed to be collected by Google as information, but I think it is very good for trying it out for free.

Recently, integration with Web Browsers is expanding. AI buttons have been added to Google and Google Chrome, and ChatGPT Atlas (currently maybe only Mac) and Perplexity's Comet etc. Since linking with searching for grounds on the Web is also effective for showing grounds, I think this direction will also expand.

I would like teachers in both high school and university to try using it while exploring and thinking about how students will utilize it. I think it would be good for administrative staff to try using it too, so that they can easily imagine what kind of world will expand from now on and when cooperating with others.

(1:05:20)

### 6.3 Story of the Middle School Student

[no.37]

Now, at the beginning, I told the story of an acquaintance's junior high school child. When I met him last week and told him that I would use that story at the beginning of the lecture this time, currently,

- So that even a junior high school student can understand.
- In the words of a junior high school student.
- Summarize in about 800 characters.

He was saying that he gets more appropriate answers by attaching conditions to the AI's response at the beginning like this. Actually, this is Prompt Engineering, which I did not talk about this time. We call "instruction sentences and question sentences input to AI" prompts, but current AI understands Context as I have already said, so although ChatGPT type and Gemini type are slightly different<sup>52</sup>, basically, by attaching conditions at the beginning, it responds in a form closer to what you want.

I think you can obtain information if you search for prompts etc. in Japanese on the net or YouTube.

---

<sup>52</sup>It comes from the difference between Transformer and BERT, but OpenAI type looks from the front, and Google type looks from both front and back for relations. I think this is also related, but overall, there is a difference in the length of sentences that can be used for free, and currently, Google can handle longer sentences. Therefore, when using OpenAI type, I try to divide by topic as much as possible.

Keiwa College has also issued [Points to Note regarding Generative AI Utilization \(Generative AI Utilization Policy\)](#). Personally, I think it is more constructive to use it together with students, having them research and present using AI, listening to others' opinions, discussing what hurts the dignity of others and what constitutes inappropriate usage within that, and further advising on what questions to ask. I think the role of teachers will become larger in advising rather than teaching knowledge.

To think about value and responsibility, isn't it important to use AI together to think together and ask what it means to protect the dignity of others?

Since I am not familiar with what you do in administration, I cannot give appropriate advice. Personally, since the speed of evolution is very fast, I do not agree much with investing more and more or introducing new things so as not to miss the bus. I think it would be good for everyone to discuss to support the students by thinking and learning what can be done using AI, what should be cherished, what needs to be careful about, and what is important for the future of high school students and university students studying at Keiwa Gakuen. I may not have been able to tell you useful stories, but I hope to be able to talk again when there is an opportunity.

(1:08:02)

## Advice from People Around

- Already part of social infrastructure and expanding
- Consider large individual differences: Digital Divide / Can one perceive it as one's own matter
- Educational reform is considered essential, but how to change is in the experimental stage
- No management, assist learning towards social adaptation while learning technical things together
- Conversely, will values like handmade things and the importance of trust relationships between humans be reconsidered?
- What is important is the determination to use it as a means to think with one's own brain
  - Must not use it to ask AI for answers. (Not using one's own head)
  - Must not make AI's answer (even if corrected) one's own words. (Feeling like it's one's own thought)
  - Knowing the outline of something unknown or confirming something slightly known is fine.
- Have one's own MVV (Mission (Why), Vision (What one wants to do), Value (How, Code of Conduct)) firmly, and use AI while checking against it and reviewing.

[no.41]

**Educational Objectives of the Department of Global Studies, Faculty of Humanities** To achieve the vision of "cultivating sensible citizens who serve neighbors and bear a sustainable society, and contributing to local and international society," cultivate attitudes respecting human dignity and human rights, basic knowledge regarding language, quantity, and ICT necessary in society, and knowledge regarding specialized fields. Cultivate cross-cultural understanding ability enabling coexistence with diverse people with a global perspective. Furthermore, based on these, cultivate the ability to think critically and analytically, express clearly and effectively utilizing language and digital technology, and cultivate human resources capable of contributing to the formation and development of a sustainable society with high ethical standards. .... Decided by the Board of Trustees 2025/11/27

Can you imagine concrete initiatives towards this objective!?

## **What are the Educational Objectives of Keiwa Gakuen High School?**

In an era of change, why not verbalize what has been cherished in the education that has provided wonderful education and sent out wonderful graduates since 1968, and what will continue to be cherished?

## **References**

- [1] "Towards Liberal Arts in the AI Era: Commemorating the 30th Anniversary of Keiwa College" by Kota Yamada, President of Keiwa College, Keiwa College Booklet No.25 (Published 2021.4.1) [Keiwa College Site/Table of Contents](#)
- [2] "Now is the Time for Atonement - Record of Love for over 30,000 Children of the Southern Islands with Japanese Soldier Fathers" by Ryoichi Kato, Seibunsha (Published 1975.12.10, 2nd Edition 1981.1.20)
- [3] "First Person: An Astonishingly Frank Self-Portrait by Russia's President" [Japanese Title: Putin, Speaking of Himself] by Nataliya Gevorkyan, translated by Noriaki Takahashi, Fusosha (Released 2000/08)
- [4] "Freedom: Memoirs 1954-2021" [Japanese Title: Jiyu Freiheit] (Vol. 1 & 2) by Angela Merkel, Kadokawa Shoten, (Released 2025.5.28)
- [5] D. Silver, D. Hassabis, et al. 'Mastering the game of Go with deep neural networks and tree search', Nature 529, 2016.
- [6] D. Silver, D. Hassabis, et al. 'Mastering the game of Go without human knowledge', Nature 550, 2017.
- [7] D. Silver, D. Hassabis, et al. 'A general reinforcement learning algorithm that masters chess, shogi, and go through self-play', Science 362, 2018.
- [8] D. Silver, D. Hassabis, et al. 'Mastering Chess and Shogi by Self-Play with a General Reinforcement Learning Algorithm', arXiv:1712.01815, [Link: [https://arxiv.org/abs/1712.01815?utm\\_source=chatgpt.com](https://arxiv.org/abs/1712.01815?utm_source=chatgpt.com)].
- [9] J. Schrittwieser, D. Hassabis, et al. 'Mastering Atari, Go, chess and shogi by planning with a learned model', Nature 588, 2020.
- [10] A.M. Turing, 'Computing Machinery and Intelligence. Mind 49 (1950): 433-460.' [Link: <https://courses.cs.umbc.edu/471/papers/turing.pdf>]

- [11] Ashish Vaswani et al, ‘Attention Is All You Need’. [https://proceedings.neurips.cc/paper\\_files/paper/2017/file/3f5ee243547dee91fdb053c1c4a845aa-Paper.pdf](https://proceedings.neurips.cc/paper_files/paper/2017/file/3f5ee243547dee91fdb053c1c4a845aa-Paper.pdf), arXiv:1706.03762, [Link: <https://arxiv.org/abs/1706.03762>].
- [12] Jacob Devlin et al. ‘BERT: Pre-training of Deep Bidirectional Transformers for Language Understanding.’ arXiv:1810.04805, [Link: <https://arxiv.org/abs/1810.04805>].
- [13] Y.N. Harari, ‘Nexus’ [<https://www.ynharari.com/book/nexus/>].
- [14] Open AI, et al. ‘GPT-4 Technical Report’, arXiv:2303.08774 [Link: <https://arxiv.org/abs/2303.08774>].
- [15] A.T. Kalai et al. ‘Why Language Models Hallucinate’, arXiv:2509.04664 [Link: <https://arxiv.org/abs/2509.04664>], [Why Language Models Hallucinate]
- [16] K. Hao, ‘Empire of AI - Dreams and Nightmares in Sam Altman’s Open AI’, Penguin Press, New York, 2025.
- [17] IBM, ‘What is artificial general intelligence (AGI)?’ [Link: <https://www.ibm.com/think/topics/artificial-general-intelligence>] [no.38]
- [18] Turing Test
- [19] What is intelligence?
- [20] Human Limitations and the Ethics of Artificial Intelligence
- [21] What is a prompt?
- [22] Evolution and Current State of AI
- [23] Hopes and Risks of AGI
- [24] Designing the Future of Education
- [25] AI education and Christian schooling
- [26] What Matters in the Age of AI

Decided the outline, then checked the content with ChatGPT. Created the script and slides, then confirmed the content using Gemini.