Chapter

Medical Hegemony and Healthcare: Centrality in Healthcare

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Abstract

Better human healthcare is achieved by increasing the fair use and accessibility of medical information. While this optimism is believed, real-world healthcare can be severely affected by the knowledge and context shared in the healthcare industry and academia. Through the sharing process, the central perception gains consensus in the industry and academic societies and standardized therapies are unified and spread quickly. In this way, mainstreamers' contexts quickly become standardized. Consequently, the mainstream has hegemony and can be strengthened. Mainstreamers neglect any information different from standardized knowledge and therapy. It is universally known that hegemony stabilize its position by undermining the fair use and accessibility of information. The use of patterned knowledge facilitates the utility of medical information. Smart ICT seems to realize the smart use of medical information in our daily lives as well as professional exercises. The method to eliminate such evils and realize true healthcare is required. The fair use and accessibility contribute to the utility of medical knowledge to end-users. The effect and influence of the commons of information are shown as a solution to eliminating adverse events caused by the hegemonic mainstream. As the most effective means in the coming digital healthcare era, this paper shows the following three points. (1) Allow commons of information to enable fair use and search of information. (2) The commons of information release the cognitive bias set by the measure. (3) By creating such a new theory, we will develop a new field called healthcare digital management and/or healthcare digital economics.

Keywords: healthcare, hegemony, centrality, commons of information, network, neutrality

1. Introduction

Achieving wellness and hence well-being is the goal of every human being. On the global scale this is articulated through the Millennium Development Goal and SDGs (Sustainable Development Goals) of the United Nations.

The science of medical and healthcare has transformed the healthcare profession by the extraordinary revolution in information technology. To utilize the true results of science, the use and accessibility of information among different healthcare professionals through network neutrality realize the true human healthcare, bringing the world together as a true global village.

2. Accessibility to medical and healthcare as public goods

It is believed that the better access by ICT will improve information barrier-free, grassroots information dissemination, and information sharing. Better human healthcare will be achieved by increasing the accessibility of healthcare information. While this optimism is believed, real-world healthcare has been severely affected by the shared information among the healthcare industries, professionals, and academia.

If information is not transmitted correctly without distorting the truth, life-threatening situations occur frequently. However, healthcare is usually neglected because it is only demanded when a person becomes unhealthy. Therefore, the supplier can behave to get the best benefit from diseases. What's worse is that the higher the need, the more urgent it is.

Due to the above circumstances, the healthcare provider is likely to take self-interest behavior. To curb such behavior, better access to information does not solve the problem. This is because the information is cleverly rewritten to suit the interest of mainstream in the healthcare industry without being noticed. In this chapter, I'll take a few such mysterious cases and explain why.

2.1 Inclusion of total healthcare by the mainstream in healthcare

According to the Merriam-Webster Dictionary, healthcare is efforts made to maintain or restore physical, mental, or emotional well-being especially by trained and licensed professionals. There are mainstreams and adjuncts among professionals. The mainstream is the most influential actor and is in a privileged position. To maintain privilege, it is common for mainstream people to try to establish a hegemonic position by involving their adjuncts.

In healthcare, medical care is at the center and all other healthcare areas are adjuncts. In medical care, treatment is at the center of the center, and prevention is one of adjuncts. Considering the pursuit of profits and strengthening of the position of medical care providers, it is better to increase the number of patients without prevention even if some patients must die. As a supporting evidence, in the pharmaceutical industry, it is an implicit understanding that the companies should not develop drugs that eliminate diseases, because the market will disappear like smallpox market by its vaccine. That is why RNA vaccine, which works faster and more effective than ordinary protein vaccines, did not take place until it was urgently approved as a corona vaccine. If RNA is used to produce stem cells, iPS cells (induced pluripotent stem cells), pluripotent stem cells, regenerative medicine for diseases including aging care and immunotherapy for the treatment of cancer will advance dramatically. Complete treatment of disease, organ regeneration, and immortal medicine have been hampered by mainstream groups to professionals. Mainstream has denied such a wonderful future as disease-free and immortal medical care.

The medical professionals should be humble about the dignity of life. When new facts are discovered, it is up to the mainstream to spread or not. The mainstream instantly includes new discoveries that can deny the mainstream. However, the mainstream attacks and denies the new discovery which can coexist with the mainstream. The reasons and causes for such absurd things to happen are for the benefit of the mainstream. Various inhumane obstacles occur, so the details are described below,

2.2 The difference in accessibility to medical care between Japan and the US

The openness of medical care is the exact opposite in Japan and the US. In Japan, not only paramedics but the nurses only can watch the patients die until the doctor arrives. Oppositely, in the US, medical practice is open to medical assistants and

paramedics. They can take life-saving measures for emergency patients who are clearly likely to die if left untreated.

Why does such a difference between the two countries occur? In short, it depends on whether the market is free or regulated. The American way seeks efficiency through a free and open market. The Japanese government operates policies assuming that medical care is at the center and others are adjuncts. This is derived from the fundamental differences in public policies between the two countries.

The U.S. government and its local agency, the U.S. embassy, have repeatedly demanded the Japanese government to open and liberalize the medical and healthcare market, but with no success, while promoting the reasons for the free-open market. For American businesses to enter the Japanese market, it is essential to deregulate the Japanese market. The U.S., which had been the world's factory until Japan emerged, has attempted to take an initiative to the world's industry by securities financing. Therefore, the US government must protect the domestic market from foreign countries but ask free and open markets to foreign governments for maintaining a global hegemony. Such American diplomacy is well-known as a double standard. The importance of the role of government is strongly asserted by American economists. It is the American way to manage social welfare services such as medical care based on the principle of competition that works in an open market. Consequently, the gap about accessibility to medical care between Japan and the U. S. has been still expanding. **Table 1** shows the accessibilities to medical care by costs for treating appendectomy in major countries.

According to the Japan Medical Association, the US is the country with the widest medical disparity in the world. "Public medical insurance in the US is limited to "Medicare" for the elderly aged 65 and over and persons with disabilities, and "Medicaid" for low-income earners. The active generation, which is not covered by these two, is mainly covered by private medical insurance. The so-called "Obama Care" obliges people who do not have public medical insurance to join a private insurance company, but there are only a limited number of medical institutions available for medical examination. Many people are still uninsured in order not to be able to pay the insurance premium. There is a big disparity in the medical care provided" [1].

Rank	City	Expenses (US$)	Hospitalization Days
1	New York (US)	14,000-40,000$	1–3 days
2	Paris (France)	2,000-8,800	days
3	Madrid (Spain)	4,000-8,350	4 days
4	London (UK)	6,700	2 days
5	Rome (Italy)	6,300-6,650	3 days
6	Geneva (Switzerland)	2,530	3 days
7	Vancouver (Canada)	6,060	3 days
8	Singapore (Singapore)	3,180-3,970	3 days
9	Dusseldorf (Germany)	3,250	3 days
10	(General example) (Japan)	2,730	6–7 days

Cited from Tokio Marine & Nichido Fire Insurance Co., Ltd.
Source: Japan Medical Association Homepage: "World Medical Care and Safety 2010" [1].

Table 1.
Costs for treating appendectomy in major countries (accessibilities to medical care by costs).

In Japan, medicine and healthcare are recognized as public goods. The government has, therefore, an obligation to protect the domestic market from free-competitive destruction. Japan attaches great importance to accessibility that anyone can access anywhere and fair use of medical care as public goods. The Government of Japan is responsible for ensuring that all the people can receive the necessary medical care. Therefore, a fundamental difference between the two countries exists in the medical care and healthcare.

Until around 1955, about 30 million people, mainly farmers, self-employed, and employees of micro enterprises, which is about one-third of the population, were uninsured in Japan, which was a social problem. However, the National Health Insurance Law was enacted in 1958, and the National Health Insurance business began in municipalities nationwide in 1961, establishing a system that allows "anyone," "anywhere," and "anytime" to receive insurance medical care [2].

Japanese Ministry of Health, Labor and Welfare has declared that the role of this system as a safety net is essential as follows:

"Under the universal health insurance system, Japan has realized a medical system that allows anyone to receive medical care securely and has achieved the world's highest average life expectancy and healthcare standards. We will continue to aim for a sustainable public medical insurance system in response to the declining birthrate, increase in the aging population, population, and changes in the economic situation" [3].

2.3 The centralization power by mainstream in the US

From the social side, mainstream blocks the entry of others to strengthen its power. Mainstreamers can get various benefits and others are excluded. Partial optimization for mainstream results in the lack of total optimization as shown in **Table 1**. On the economic side, mainstreams amplify their interests while blocking the entry. This accelerates the centralization by mainstream, that starts to have a gravitational force that attracts various things. Mainstreamers begin to exert hegemonic influence to stakeholders and concessions authorized by the government create a chain of interests.

From the standpoint of the government and the market, initially, everything starts with a good idea for society, but policies act to fix benefits. They compete for the pie of government budgets. Governmental policies will be taken to ensure vested interests. Historically, the economy has set the direction for government. In the US, the globalized economy has gained centrality, set the direction of government, and could therefore gain the hegemony in the healthcare. Thus, as a result, a mechanism has been created in which mainstreamers increase profit and the public does not get the lowest benefits in the world.

2.4 The power of centrality to the publicity in the US

On the publicity in the US, at the center of political economy, the centrality determines everything through funding for politicians, the media, university professors, and researchers. It is well known that every public good is commercialized in the US by the logic, that competition in the market is better than government control.

The situation surrounding the potentially life-threatening medical care is dire and irreversible. A typical example is Medicaid. Medicaid is a government medical benefit system for low-income people who have difficulty in taking out private medical insurances (including persons with disabilities and pregnant women who are recipients of supplementary income security). The cost of Medicaid is increasing from 1980s' when market fundamentalism was applied to medical care, as shown in **Figure 1**.

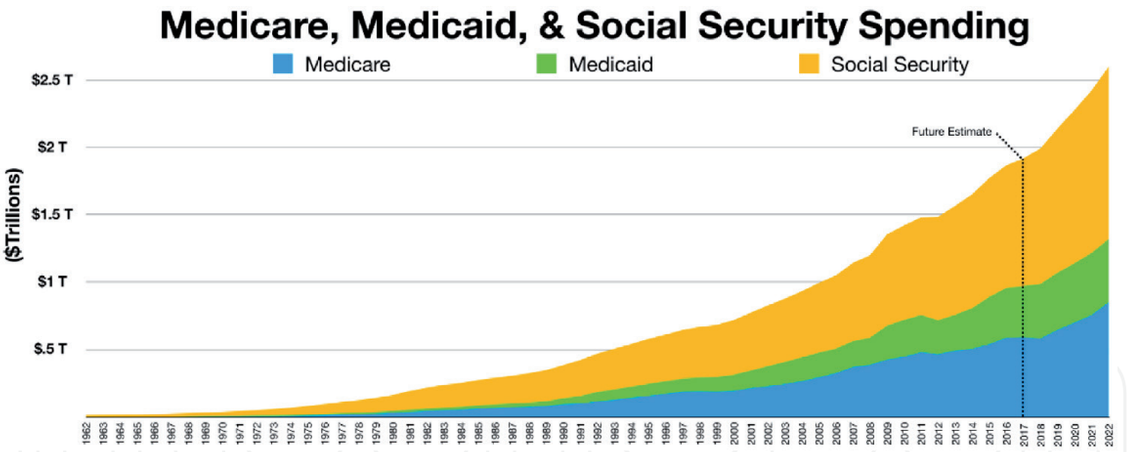

Figure 1.
Public healthcare insurances and social security expenses in the United States (Wikipedia) [Internet]. 2021. Available from: https://commons.wikimedia.org/wiki/File:Medicare,_Medicaid,_and_social_security_spending.png [accessed: 2021-6-7 including citations in the text below].

Regarding medical expenses in the US, according to the Medicare Medicaid Service Center in the US, medical expenses in the US in 2018 totaled $ 3.6 trillion, and $ 11,172 per capita. It accounts for 17.7% of GDP. The medical cost per capita in Japan is $ 2,920 (321,100 yen), which is almost four times higher.

Even though medical expenses and the US government spending on per capita are the highest in the world, it is far from a universal service that allows people to live safely, securely. Only the US and Mexico have failed to achieve universal healthcare in OECD countries [4]. The lack of medical insurance in the US causes 45,000 to 48,000 unnecessary deaths each year [5, 6]. About 25 percent of young citizens have filed for bankruptcy due to high medical costs, and 43 percent of them have sold real estate for that purpose [7].

In the US, the power of centrality introduces market principles to what is in publicity, and businesses succeed in profiting from the people and the government, resulting in poverty and pressure on the government's finances.

3. Accessibility and medical hegemony

3.1 Accessibility to healthcare

As mentioned above, there is a negative correlation between the degree of inequality and accessibility. What makes the difference between Japan and the US? Japan focuses on protecting people. Japan is a country that values dignity for life and ethics. In the US as well, business executives were highly aware of high moral aspirations, wide moral foundation [8] and public institutions [9] for people and society till 1950s'.

Due to the championship of huge securities financing capital, globalization has been progressing in the US. As the securities financing business has played a central role in the US economy, the US have assumed that free competition in the market would solve social problems. Free competition strategy has helped the US securities financing industry rule its economic and political hegemony in the global market.

The US spends the most on healthcare in high-income countries. Total medical expenses per capita has been continuously rising from 1981 [10]. **Table 2** shows the ranking of medical expenses per capita. The total medical expense per capita in the US is 2.22 times that of Japan, 2.60 times that of the United Kingdom, and

Country	Healthcare Rank	Total medical expenses per capita (US$)
United States	1	10,586.08
Switzerland	2	7,316.61
Norway	3	6,186.92
Germany	4	5,986.43
G7 Average		5,539.29
Sweden	5	5,447.11
Austria	6	5,395.11
Denmark	7	5,298.82
Netherlands	8	5,288.44
Luxembourg	9	5,070.17
Australia	10	5,005.32
Canada	11	4,974.33
France	12	4,964.71
Belgium	13	4,943.54
Ireland	14	4,869.36
Japan	15	4,766.07
Oceania Average	16	4,463.98
Iceland	17	4,349.09
Finland	18	4,235.55
United Kingdom	19	4,069.57
OECD Average		3,992.35

Source: OECD Health Data.

Table 2.
Ranking of medical expenses per capita in 2018.

2.65 times that of the OECD average. Total medical expense of the US is the highest, despite the worst medical care for the public.

In Japan, Japan's Big Bang package was done from April 1, 1998 to March 2001. The first liberalization removes barriers for foreign companies to buy or to sell Japanese companies. As a result, shareholders started to ask high dividend on stock. Restructuring was carried out as companies prioritized immediate profits over the future. The unemployment rate in Japan is steadily increasing, and the number of non-regular employees is also increasing, which is a factor of disparity.

Regarding healthcare system, Japanese public opinion and the government have not chosen the policies to widen the inequality, because the right to life is guaranteed by the Constitution as well as the right to live a healthy and cultural life. On the contrary, there is no right-to-life clause in the US Constitution.

3.2 Affordability and timeliness determine the health of people

According to WHO (the World Health Organization), a well-functioning healthcare system requires a steady financing mechanism, a properly-trained and adequately-paid workforce, well-maintained facilities, and access to reliable information to base decisions on. These include the care process (preventative care measures, safe care, coordinated care, and engagement and patient preferences),

access (affordability and timeliness), administrative efficiency, equity, and healthcare outcomes (population health, mortality amenable to healthcare, and disease-specific health outcomes) [11]. Based on these five measures, WHO publishes health system rankings "Measuring Overall Health System Performance for 191 Countries" as shown in **Table 3**.

Yet the U.S. population has poorer health than other countries. Life expectancy, after improving for several decades, worsened in recent years for some populations, aggravated by the opioid crisis. In addition, as the baby boom population ages, more people in the US—and all over the world—are living with age-related disabilities and chronic disease, placing pressure on healthcare systems to respond [12].

A study by The Commonwealth Fund [12] used these metrics to rank 11 countries based on their quality of healthcare. The top-ranked countries are the United Kingdom, Australia, and the Netherlands. Regarding care process, the US also performs above the 11-country average on preventive measures like mammography screening and older adult influenza immunization rates. However, the US performs poorly on several coordination measures, including information flows among primary care providers, specialist and social service providers. The US also lags other countries on avoidable hospital admissions.

Among them, the US ranks last on Access. The performance of the U.S. is the worst in all countries on the affordability subdomain, scoring. According to these discussions, there is no dispute that affordability and timeliness are key elements of accessibility. And these factors determine the health of the people in a nation.

3.3 Centralized power of mainstream and innovation

Because of the Japanese strict national licensing system, medical insurance companies lacked the willingness to take on new challenges. Take advantage of the opportunity not to change anything, cancer insurance had come from the US. The typical success case of the US was the monopoly of cancer insurance in the Japanese market by Aflac, a small US insurer, which prevented Japanese insurance companies not to enter the market from1972 to 2001. The US has repeatedly made demands for the US industries, as Japan has always been reluctant and weak against the demands of the US. Japan-US insurance talks held at the same time as the talks to break the trade conflict between Japan and the US. At that time, the original purpose was trade negotiations, but regardless of that, the US securities financing industries, which have economic and political central influence in the US, aimed to enter the Japanese market. It is agreed that cancer insurance and medical insurance cannot be sold by Japanese major life insurance companies and non-life insurance companies in Japan. As a result, Japanese insurance companies have been unable to enter the market for a long time, and Aflac, which entered the Japanese cancer insurance market in 1974, maintains an overwhelming market share.

By this time, the US had already shifted its focus from manufacturing to securities financing. During this period, policy had shifted to increase international influence through the securities financing industries for overwhelming the industrialized nation of Japan. Economists had gotten influential power on federal policymaking since the late 1960s, leading the US in the wrong direction about domestic healthcare system and fostering social disparity. The big problem was that many economists unconditionally believed that free competition and free trade were best. Many economists sacrifice welfare and prioritize efficiency.

It is the American way to manage social welfare services such as medical care based on the principle of competition that works in an open market. This has made the healthcare industry inefficient, as afore mentioned in the former sections. The cost of treatment for common illnesses became unusually high after 1980. Disparity

Country	Healthcare Rank	2021 Population
France	1	65,426,179
Italy	2	60,367,477
San Marino	3	34,017
Andorra	4	77,355
Malta	5	442,784
Singapore	6	5,896,686
Spain	7	46,745,216
Oman	8	5,223,375
Austria	9	9,043,070
Japan	10	126,050,804
Norway	11	5,465,630
Portugal	12	10,167,925
Monaco	13	39,511
Greece	14	10,370,744
Iceland	15	343,353
Luxembourg	16	634,814
Netherlands	17	17,173,099
United Kingdom	18	68,207,116
Ireland	19	4,982,907
Switzerland	20	8,715,494
Belgium	21	11,632,326
Colombia	22	51,265,844
Sweden	23	10,160,169
Cyprus	24	1,215,584
Germany	25	83,900,473
Saudi Arabia	26	35,340,683
United Arab Emirates	27	9,991,089
Israel	28	8,789,774
Morocco	29	37,344,795
Canada	30	38,067,903
Finland	31	5,548,360
Australia	32	25,788,215
Chile	33	19,212,361
Denmark	34	5,813,298
Dominica	35	72,167
Costa Rica	36	5,139,052
United States	37	332,915,073

Table 3.
Ranking of well-functioning national healthcare systems in 2021 (by WHO) [10].

expanded among professionals as well. Low quality doctors go to poor areas. Excellent doctors who can get a high salary gather in the area where rich people live. Medical disparities are further widening due to the phenomenon of cream skimming, which businesses only enter profitable areas. Medical disparity is a detrimental effect of free competition. Therefore, there will be many medical refugees who cannot receive the necessary medical care like developing countries.

On the other hand, Japan attaches great importance to fairness in accessibility that anyone can access anywhere. To give the simplest example, in Japan, anyone can be treated equally by a well-known doctor in any hospital without appointment. As a code of ethics to guarantee the access, doctors are prohibited by law from refusing to see a patient.

It looks like the government is providing good healthcare, but it won't do anything new. Therefore, organizations that should promote innovation can defend themselves. Such a thing was permitted within the authorities, so the approved ranking of anti-corona vaccines was the last among developed countries. In addition to the delay in approval of the vaccine against the anti-cervical cancer virus, which has confirmed clear efficacy and had been approved in advanced countries, it has not been approved for use by men. This is because the head of the vaccine department of the authorities continued to extend approval to the next person in charge for fear of side effects.

The John Maddox Prize is an award given by "Nature" to those who have contributed to the dissemination of science and scientific evidence for the public good. In 2017, it was presented to Riko Muranaka, a medical doctor and journalist who has continued to send out information to verify the safety of the HPV vaccine. Nature described the HPV vaccine as "recognized by the scientific community and medical community as a key to preventing cervical cancer and other cancers and endorsed by the WHO (World Health Organization)." Moreover, in Japan the vaccine has been subject to a national misinformation campaign to discredit its benefits, results in vaccination rates falling from 70% to less than 1%. " Nature evaluated her activities as "spreading science and scientific evidence for the public interest while facing difficulties and hostility," and selected from 100 candidates from 25 countries. Ms. Muranaka said, "I think it's powerless to see that the situation has not changed even though I've written so much." The biggest problem is not being there. The nation must take responsibility for the lives of its people. " Nature severely criticized the situation in Japan, saying that "a false information campaign that undermines the reliability of this vaccine was carried out nationwide" [13]. The data to disseminate false information was deliberately forged by an authoritative university professor who received research funding from the authorities to create fake data to deny.

For public interest, universal services should be obliged by the government to provide benefits to all, regardless of wealth, social class, men and women of all ages, or region. Even in Japan, where bioethics and publicity are the top priorities, the reality is beyond imagination. Professionals try to be central by acting for their own benefit. Once power is centralized, it is a virtue within the mainstream to not change unless it is related to their own interests.

3.4 Lack of accessibility due to medical hegemony

The US government and scholars argue that if regulators decide everything, they will not be able to provide adequate medical care to the public. This is because regulation would make it as if there was only one monopoly and would not try for customers [14]. Mainstream scholars such as Michael Porter have argued that better medical care should be provided in the competition. In fact, the most advanced medical care is being developed and provided in the US. As a result, the

most expensive medical ecosystem in the world and the lowest accessibility among developed countries has been created.

Figure 2 shows the annual change in the monopoly of American hospitals. An HHI (Herfindahl–Hirschman Index) score is the sum of the squares of the market share of each player in a market. For example, in a market where there is only one hospital — a monopoly — with 100 percent market share, that market's HHI score is 10,000 (100 squared). A market with only two hospitals, in which one has 60 percent share and the other 40 percent, has an HHI of 5,200 (60 squared plus 40 squared). The Federal Trade Commission considers markets to be "highly concentrated" if their HHI scores are 2,500 or higher. In other industries, such as airlines or cell-phone carriers, the FTC routinely seeks to block mergers that would increase HHI scores above 2,500. In the hospital industry, however, the median market HHI exceeded 2,500 in the year 2000 and reached 2,800 in 2013 [15].

A new wave of hospital mergers is driving market concentration higher. The blue bars denote the number of merger and acquisition transactions in a given year; in the 1990s, penetration of managed-care insurers, with a mandate for more aggressive cost control, led hospitals to merge in response, strengthening their market power over the insurers. The Federal Trade Commission (FTC) and the US. Department of Justice (DOJ) normally consider markets with an HHI above 1,500 as "moderately concentrated" and markets with HHI above 2,500 as "highly concentrated," triggering antitrust litigation. However, consolidated hospital markets have largely avoided antitrust litigation. In 21th century, more than half of the hospital markets in the US have an HHI above 2,500, meaning that the FTC and DOJ would consider them to be "highly concentrated" (Sources: A. Roy/FREOPP analysis and graphics, Robert Wood Johnson Foundation, Martin Gaynor, Irving Levin Associates, HHS ASPE.) [15].

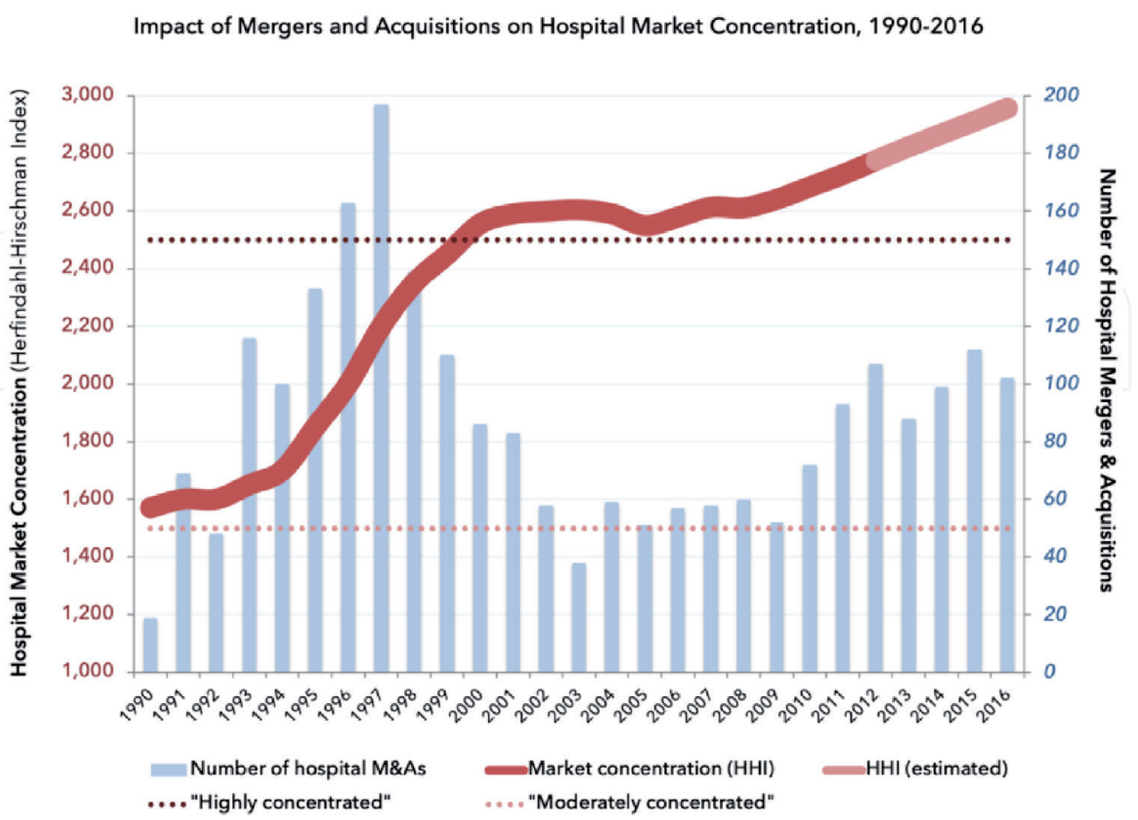

Figure 2.
Annual trends in the degree of monopoly by large hospitals in the US (source: "Avik Roy, The Foundation for Research on Equal Opportunity").

Market concentration contributes to raising the profit margin not only in the medical industry but also in the healthcare industry to get the highest interest rates in the world. In conclusion, the medical industry, which has increased its centrality by concentrating, is the most profitable in the world. The influence of this medical hegemony has resulted in poor accessibility to healthcare in general.

4. Opening medical barriers with digital healthcare

4.1 Barriers built by medical hegemony

The situation in which a hospital becomes huge and has an impact on overall healthcare could be defined as medical hegemony. According to WHO, universal healthcare can be determined by three critical dimensions: who is covered, what services are covered, and how much of the cost is covered [16]. In the US, hospitals, health insurance companies, and pharmaceutical companies have become huge after 1980. Such huge healthcare providers have taken medical hegemonies and guide policies. Eventually, lack of accessibility results in unsatisfactory access to the medical needs of the public. As a result, WHO and the National Academy of Medicine and others have concluded the US is the only wealthy, industrialized nation that does not provide universal healthcare in 2021.

Medical care has its own peculiarities. In the medical and long-term care fields, only the provider has the information. Patients have no choice but to believe and entrust without bargaining even if they lie. Therefore, those who provide low-cost and high-priced medical care services accumulate profits and dominate the market. Once become huge, they can affect various fields and the hegemony has been established.

Even if information is disclosed for the purpose of resolving information asymmetry, it is practically impossible for consumers to have equal bargaining power. Therefore, in free competition, the supply side has an absolute advantage in deciding what to do. In free competition in a state where information is asymmetric and bargaining power is imbalanced, prices rise by the following mechanism, resulting in the exclusion of consumers [17].

1. If the information is completely asymmetric, free competition will bring about market failure. Consumers do not know whether good or bad (lemon), so the bad suppliers survive and the good suppliers disappear. As a result, inferior products (lemon) are on the market. (The market for lemons)

2. If there are essential remedies and treatment methods, the supply side can raise the price as the demand increases. This is the result of price equilibrium when demand increases for limited resources (rents) such as land. (The law of rent)

3. The best management strategy for the supply side is to enter the market with the highest profit margin. Competitors lose if they do not do the same. (Prisoner's dilemma causes bubbles and injustice).

4. The optimization strategy for the supply side causes inefficiency of the entire industry and create barriers that customers cannot get involved with. (Total inefficiency by partial optimization)

In the free competition market, there are many people who cannot receive satisfactory medical care because they cannot pay. On the contrary, those who can

afford high treatment can enjoy exclusively top-level medicine. Thus, the barrier between supply and demand remains high. The gap in accessibility from consumers deepens and cannot easily repair once medical hegemony is fixed.

4.2 The source of hegemonic power

Digital healthcare is expected to increase the accessibility of medical information and to remove the medical barrier. Although this optimism is believed, real-world healthcare can be severely affected by the knowledge and context shared in the healthcare industry and academia. The problem is that common knowledge is spread by mainstream people.

The use of patterned knowledge from mainstream facilitates the use of medical information. Further utilization of smart ICT will facilitate to realize the smart use of medical information in our daily lives and therefore improve the accessibility to healthcare information. Through this process, the central perception will quickly gain consensus in the industry and academic societies. Through such a process, practical knowledge is unified and spreads quickly. In this way, mainstream contexts quickly become more and more widespread. In other words, this makes it easier for mainstream to establish hegemony.

Hegemons have become the center of the world and gained centrality by setting a global standard. This strategy allowed hegemony to accumulate economic power and become the center of politics, economy, and society. To maintain centrality, hegemons have no choice but to do rent seeking for themselves, not for the total benefit. **Figure 3** illustrates the transition of hegemonic nations. The hegemonic nation is deprived of the next hegemony by a neighboring country across the sea. By imitating and improving the previous economic system, neighboring countries that do not interact directly have become hegemonic nations one after another [18].

1. Egypt prospered from the fertile land of the Nile and its slave civilization. 2. the Greek police nations become the center of trade, 3. Rome is based on the vast territory that supplies slaves, 4. Islam relays East-west trade, and 5. Spain mined gold and silver in South America and circulated minted coins in Europe. 6. the Netherlands

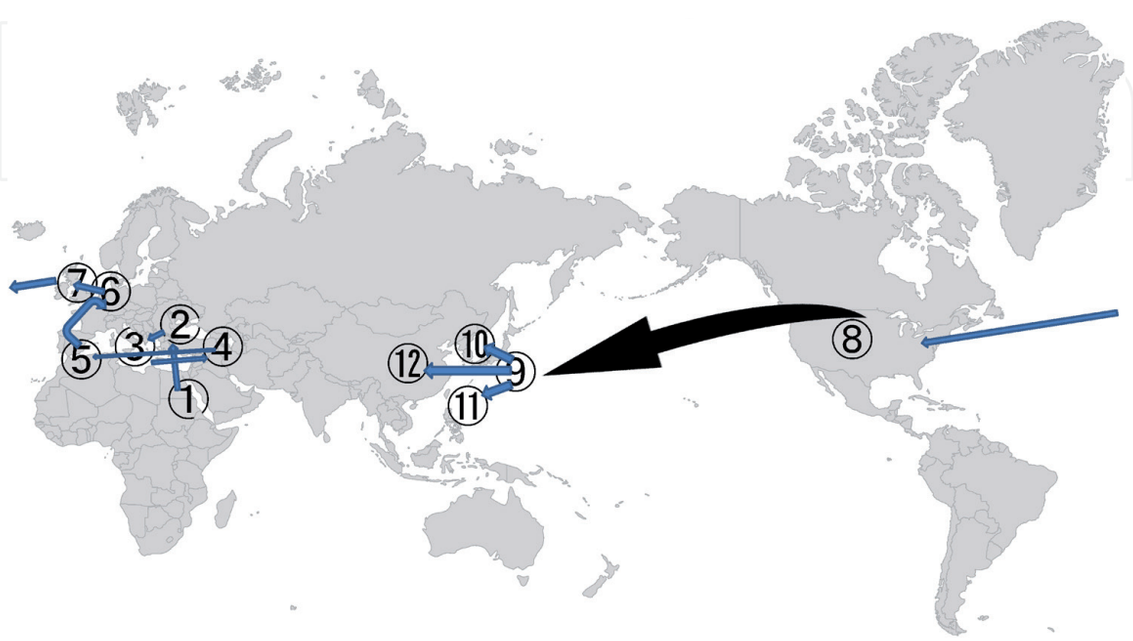

Figure 3.
Transition of hegemonic countries [18].

became the global trade center with currency exchange, 7. the United Kingdom became the financial center (Citi) and the world's factory by Industrial Revolution, 8. the US became the world's factory by the mass production system and then global securities and financial center, 9. Japan realized mixed production system with small-volume plus mass customization and became the world's factory, 10. South Korea, 11. Taiwan, and 13. China acquired the world market with imitation power.

A hegemon could become the center of the world by imitating and surpassing the previous hegemonic power [19].

The reason for the emergence of hegemonic states can be seen from the fact that the source of hegemony is not civilization but economic power.

4.3 Success/failure judgment method for information issued by medical hegemony

Can doctors adhere to justice fairly and selflessly in all situations? Hippocratic oath is an international norm that doctors should comply with. The ethical code attributed to the ancient Greek physician Hippocrates, adopted as a guide to conduct by the medical profession throughout the ages and still used in the graduation ceremonies of many medical schools. The oath dictates the obligations of the physician to students of medicine and the duties of pupil to teacher. In the oath, the physician pledges to prescribe only beneficial treatments, according to his abilities and judgment; to refrain from causing harm or hurt; and to live an exemplary personal and professional life (Encyclopedia Britannica).

In the medical world, the problem is physicians have never accepted novel approaches when treatments does not replace current therapy. Players in the mainstream (stakeholders such as opinion leaders, physicians, pharmaceutical firms, university professors etc.) are not only reluctant to try any noble therapeutic approaches, but they have always denied and attacked.

It is well-known that medical hegemony intends to stabilize its position by undermining the fair use of information. For judging the correctness of medical information, it is possible to check simply whether one piece of simplified information is yes or no. Yes/no methods can clarify responsibility in the event of an error. RNA injection is a typical example that used to be no but became yes. The properties of cells can be altered by introducing RNA instead of genetic engineering. Therefore, the rapid supply of corona RNA vaccine became possible. In addition, RNA injection can be used for in vivo production of pluripotent cells instead of in vitro production of iPS cells.

RNA injection method was denied by mainstreamers. This is explained by inevitable win-lose theory that indirect competitive innovation is neglected by mainstreamers. Surprisingly, in case of direct competition, mainstreamers accept new thing, but in case of indirect competition, they deny the new one [19–22]. The reason is that they will be replaced by challengers if they do not accept directly competitive thing. However, without exception, they deny new things that indirectly compete with. Usually they spread fake information. They choose the immediate stability because they cannot be replaced immediately. It often takes time to be replaced, but the mainstream faction changes. It should be noted that both actions are taken to defend the position of the championship.

Nevertheless, professionals will continue to disseminate the information claimed by the mainstream. This is because expressing disagreement has adverse events. Whenever novel treatments are discovered that do not directly replace traditional one, they are denied without evidence and prevent them from being adopted. **Table 4** shows categorized patterns of disinformation deliberately created by the mainstreamers [23].

Therapy	Traditional	Novel therapeutics
1) Few targeted patients		
CV in Japan (Cardiovascular)	Ca blocker	ARB (Angiotensin receptor blocker)
2) Slow onset of effect		
GI in Japan (Gastrointestinal)	H2 blocker	PPI (Proton pump inhibitor) Helicobacter pylori extermination
3) Not immediate effect		
Anti-cancer drug	Chemotherapy	Antibody drug, cancer vaccine
4) High satisfaction		
RA (Rheumatoid Arthritis)	Symptomatic treatment (MTX: methotrexate)	Antibody drug (anti-TNF)
5) Evaluation criterions are unknow		
Transfusion alternative	Red blood cells transfusion	EPO (Erythropoietin, red blood substitute)
6) Biopharmaceuticals	Small compounds	G-CSF
7) Regeneration	No way	iPS cells, RNA drugs
8) Oligonucleotide Therapeutics	Oligonucleotide does not enter the cell. Anxiety of possible genetic mutations, without evidence	RNA or DNA injection, Speed-up approval for in vivo antibody production against coronavirus Autologous cell therapy by pluripotent cell proliferation

Table 4.
Disinformation on novel therapy created by the mainstream [23].

1. CV (Cardiovascular) was the most major therapeutic area in the world. Ca blocker has created a market with a particularly high share in Japan. Authorities in the CV area were respected as representatives of physicians. This therapeutic area covers not only hypertension, but also all over the lifestyle-related disease. In this type of prioritized therapeutic area, companies create mainstream by writing treatises and giving research achievements to company-nominated opinion leaders, young doctors, and supporters based on each strategy. Therefore, major physicians in the CV field have kept a tight relationship with pharmaceutical firms and have received financial support especially as research fund. Pharmaceutical companies have also set up programs to train prominent young doctors for next new product developments and marketing purposes.

According to major Japanese pharmaceutical firms, fast onset was the key point of Ca blockers. Therefore, common opinion was that there were few cases to be targeted by a new ARB (Angiotensin receptor blocker) therapy because ARB is not fast-acting. However, the fact was exactly the opposite. Only amlodipine, which had a slow onset and a long half-life just like ARB, was increasing sales.

In Japan, all opinion leaders and major journals did not support ARB, even after ARB became the first choice among all other countries. By author's effort, a Japanese firm could get a license of ARB from a German big Ca player despite company-wide opposition.

Despite such industry-wide dissenting opinions, the share of the new therapy reached over 70% of the patients once the first ARB was launched. Although the overall evidence approved lifestyle-related diseases, professionals ignored the merit of organ-protective effect of ARB. Mainstream companionship is not evidence-based.

2. GI (Gastrointestinal) area is the largest market in the world till around 2010. A world-top share H2 (Histamine 2 receptor) blocker was originated by a Japanese firm. It was well recognized among Japanese firms and mainstream professors that extermination of *H. pylori*, the causative bacterium, would completely cure the gastric ulcer and prevent stomach cancer.

Mainstream professors and physicians received financial supports. Running out of money is a problem. The world top share product, which is originated by a Japanese firm, suppresses the immune elimination of cancer cells by NK cell inactivation since histamine is essential to activate NK cells.

Japanese pharmaceutical firms advertised that new PPI (Proton pump inhibitor) therapy did not cure the symptoms. Eradication of gastric ulcer and gastric cancer causative bacteria, Helicobacter pylori, by PPI was a standard therapy in Europe and the US. Approval in Japan delayed more than 10 years. PPI became the first choice once the patent for top-seller H2 blocker expired. This witnesses the strength of dominance.

Table 5 shows that the ratio of deaths by stomach cancer is the highest among other countries in 2005 (before the PPI era). The death rate of stomach cancer in Japan is 10 times higher than that of Americas. It is known in the pharmaceutical industry that this is due to the widespread of a top-seller H2 blocker in Japan.

3. Anti-cancer therapy is mainly by drug therapy in combination with surgery or radiation. Anticancer drugs control the growth of cancerous cells by toxicity.

When antibodies that suppress the growth factors of breast cancer cells had been developed, firms, professors and physicians have denied every time. As proof of lack of intension, they do not conduct in-hospital trials for applicants like toxic drug candidates. The drug delay has happened all over the world.

All professionals have denied the effectiveness of antibody drugs and the anti-cervical cancer vaccine mentioned above. HTLV (Human T) was first discovered as a causative virus of adult T-cell lymphoma (ATL) by Dr. Hinuma at Kyoto University in 1977. A negative campaign against cancer viruses' existence was held through the 20th century. Many scholars, who have been associated with the prestigious professors of the mainstream, have been openly, unfounded, and emotional, and have continued to deny until very recently. It has been proved that more than 30 percent of cancers have been caused by cancer viruses, which are increasing year by year.

4. Rheumatoid arthritis destroys joints due to autoimmunity, and eventually the organs are gradually destroyed, resulting in multiple organ failure and death. MTX (methotrexate), which have an immunosuppressive effect on symptomatic treatment, is widely used. New antibody therapy (anti-TNF antibody),

	Cancer Death	Overall Stomach Cancer	Lung Cancer
Japan	303.3	52.2	67.6
Americas	207.2	5.3	65.5
UK	279.2	13.7	70.0
France	303.2	11.0	72.0

Source: Cancer Statistics, National Cancer Center Japan.

Table 5.
The ratio of deaths by stomach cancer per 100,000 men in 2005.

which blocked immune cells from killing patients' bodies, were neglected, despite mainstreamers watched an evidence that patients with difficulty of walking started walking quickly after injection. If they are cured completely, they do not need to visit doctors.

MTX therapy is practiced as a standard treatment all over the world and satisfied doctors. MTX is mildly toxic but are popular as a first choice, so the conclusion was there was no need to change treatments.

5. EPO(Erythropoietin) stimulates red blood cell proliferation (erythropoiesis) in the bone marrow. EPO is an alternative to blood transfusions, but it was denied that red blood cell transfusion is cheap.

EPO is now used in treating anemia resulting from chronic kidney disease, chemotherapy induced anemia in patients with cancer, inflammatory bowel disease (Crohn's disease and ulcerative colitis) and myelodysplasia caused by cancer chemotherapy or radiation.

The risk of viral infection is greatly reduced. If a cancer patient can be operated on without blood transfusion, the rate of recurrence and metastasis of cancer is greatly reduced because immune disturbance is not caused without blood transfusion.

6. Biopharmaceuticals are categorized 5 major classes; extracts from living systems, recombinant products, vaccines, gene therapy, RNA or DNA drugs (nucleic acid drugs).

G-CSF (Granulocyte Colony-stimulating Factor) is a type of growth factor. Patients might have G-CSF after chemotherapy to help their white blood cells recover after treatment.

It was rejected by mainstreamers except bio-venture firm, because of different treatment criteria. Mainstreamers and larger pharmaceutical firms resisted and opposed the new treatment to stimulate granulocyte proliferation.

Total market size of Biopharmaceuticals is beyond the half. This means the utility of biopharmaceuticals has been neglected by mainstreamers and professionals. According to IQVIA World Review Analyst 2020 forecast [24], the pharmaceutical market in 2019 was $ 1.2624 trillion, up 3.3% from last year. The market share of the top 100 pharmaceutical sales items (hereinafter referred to as the top items) was about 32%. Total sales of top items in 2019 were $ 401.3 billion, up 6.4% from last year. According to the technical classification of active ingredients (chemically synthesized drugs and biopharmaceuticals), there are 55 items of chemically synthesized drugs and 45 items of biopharmaceuticals, which is higher than the 2018 survey (59 items and 41 items, respectively). biopharmaceuticals increased by 4 items. Among the top items, 10 items have been replaced since 2018, of which 5 items have been replaced by 9 items and biopharmaceuticals items have been replaced by 5 items and 1 item has been replaced year by year. In addition, biopharmaceuticals sales accounted for $ 209.7 billion, 52% of top item sales, and although synthetic drugs accounted for more items, biopharmaceuticals accounted for more than half of sales for the first time in previous surveys.

7. Regeneration

Regenerative medicine will be the ultimate medical treatment aiming at immortalization and complete cure. Drug companies and mainstreamers do not develop complete cures that will eliminate the need for drug administration and shrink the market.

Around 1988, the author applied to MHW (the Ministry of Health and Welfare), Japan Health Sciences Foundation, major firms and JPMA (Japan Pharmaceutical Manufacturers Association) a research project on the generation of pluripotent cells by gene transfer as an innovative research theme. The proposal was neglected to adopt as a research theme because complete cures eliminate the market.

All doctors have still denied that the cells were reprogrammed. This is incompatible with a basic principle of embryology, the developmental process of higher organisms repeats evolutionary process (the law of developmental repetition, Haeckel's Law). For biologists, regeneration overturns their basic assumptions.

That is why mainstreamers at Kyoto University still underestimate the possibility of iPS cells and overstate that the risk. Since the mutation rate of cells is higher in liquid culture than in vivo, they should develop a culture system like in the body. The creation of iPS cells or pluripotent cells by direct injection of RNA into the human body would reduce the risk of genetic mutation.

8. Oligonucleotide therapeutics uses basically RNA or DNA. Oligonucleotides are nucleic acid polymers with the potential to treat or manage a wide range of diseases and can be used to modulate gene expression via a range of processes including RNAi (RNA interference), target degradation by RNase H-mediated cleavage, splicing modulation, non-coding RNA inhibition, gene activation and programmed gene editing. As such, these molecules have potential therapeutic applications for myriad indications, with several oligonucleotide drugs recently gaining approval [25]. As shown in the above Nature Review [25], although the majority of oligonucleotide therapeutics have focused on gene silencing, other strategies are being delayed or neglected by mainstreamers.

Oligonucleotide drugs such as RNA or DNA injection for producing antibodies was supposed to be ineffective and risky without evidence. Well-known mainstream scholars slandered the developers. As a matter of fact, only venture companies were developing quietly.

Suddenly in early 2020, rapid vaccine development and urgent supply were needed to prevent the spread of coronavirus. Speed-up approval of RNA or DNA vaccines against coronavirus was given worldwide, but Japan was the lowest in the world.

As a matter of life and death, the clinical trials were urged to conduct development of coronavirus vaccine. Similarly, immunotherapy for cancer should be as safe and effective as vaccines in post-infection adverse effects. However, almost professionals and drug companies are still not willing to admit.

RNA produces iPS cells therapeutics will repair complete body and will pave the way for spontaneous healing with their own cells. There is some evidence that such treatments are effective. As an example, in our brains, 50,000 nascent neural stem cells are born every day. Even at the age of 80, the same amount of regeneration as young people happens. Full-function recovery therapeutics by oligonucleotide will become the ultimate complete cure treatment. Complete healing of aging or diseases is unacceptable to mainstreamers. They do not intend to contribute to human healthcare, because they will definitely lose the hegemony in the current system. How to solve the problem is the next issue to be discussed.

4.4 Freedom from the centrality of hegemony by setting network neutrality through commons of information

Through the discussions so far, author has analyzed the actions taken by mainstream people in medical care and healthcare, which deal with life and health. The

mainstreamers always win any new product developments that directly competes with and therefore replace the mainstream [19–22].

In case of indirect competition, mainstreamers inevitably lose any new product developments. As far as a new does not directly compete with the mainstream, they deny the fact until the mainstream is replaced. Even if treatments begin to be adopted, mainstreamers always deny and criticize the use of alternative treatments. For example, the evidence is that the discovery of the presence of a cancer virus, the ability to artificially generate pluripotent stem cells, and the fact that RNA can be used for treatment are not acknowledged and criticized.

Mainstreamers do not approve such facts until they understand that they will be replaced soon. Due to the dominant structure of the mainstream, novel therapeutics such as desensitization therapy using oral immunity for pollinosis and cervical cancer virus vaccination for men many innovative approaches delayed approvals by the Authorities. Many have been sacrificed by mainstreamers.

The method to eliminate such evils and realize truly useful healthcare is required. The effect and influence of the commons of information will become a solution to eliminating adverse events caused by the hegemonic mainstream. As the most effective means in the coming digital healthcare era, commons of information is now under construction. In July of 2020, Japanese Ministry of Health, Labor and Welfare confirmed its policy of intensively working over the next two years to operate a system that allows medical institutions and pharmacies nationwide to share medical information of patients online and use it for patient treatment and health promotion. Customers and service providers such as doctors pharmacists, health instructors, nurses in charge can check the treatment history. In these ways, the information that the doctor has kept secret is inevitably made public and reviewed, which can lead to criticism in some cases. Even if that patient can find a provider, the existing healthcare system is likely to create a lot of unnecessary impediment and expense in the US. Digital pharmacy expands access to professional healthcare. It would be a great start to access and utilize such kind of commons of information.

With the rapid penetration of the mobile Internet into everyday life, the ruler of the information is changing. Innovative ideas are realized instantly on the mobile and advanced media, according to instant innovation [26–28].

As various media are put to practical use in general life, the media affects not only on everything in our society and life. As a result of the widespread use of mobile terminals, advanced media has being breaking down the barriers built by the mainstream with hegemony by setting net neutrality in the instant communication through mobile.

Mobiles process various information in parallel and multiple parallel worlds exist at the same time. Information selection has made it possible for users to create necessary information from the side that creates information, and users have come to directly experiment and implement it. This kind of instant communication leads instant innovation [26].

Already, some app platforms for disclosure and use of medical information have been developed. Open information will be searchable in Information Commons, a platform for sharing information. There is no doubt that patients and end users who need information will become aware of everything from daily healthcare to disease information.

Instant innovation that happens on mobile is the opposite of traditional innovation, because end users choose their best. Moreover, the product is evaluated immediately. Therefore, the adjustment is performed so that it is easy to use from the customer side. A platform that is open and can bring the best solution survives automatically [26].

The effect and influence of the commons of information eliminate adverse events caused by the hegemonic mainstream. As the most effective means in the coming digital healthcare era, the commons of information has instantly created network neutrality on the mobiles. The network neutrality is independent of the mainstream. Therefore, only the commons of information, which is a platform with the following three points, survive:

1. Allow commons of information to enable fair use and fair search of information.

2. The commons of information release the cognitive bias set by mainstream.

3. The platform with fair use develop fairness of digital management and digital economics in the healthcare.

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References

[1] Japan Medical Association. Medical standards and medical expenses in Japan and other countries [Internet]. 2021. Available from: https://www.med.or.jp/people/info/kaifo/compare/ [Accessed: 2021-5-24]

[2] Kenporen (Health Insurance Federation, Japan) home page. In fact, we are blessed! Japan's universal health insurance system [Internet]. 2021. Available from: https://www.kenporen.com/health-insurance/basic/01.shtml [Accessed: 2021-5-24]

[3] Ministry of Health, Labor and Welfare home page. Aiming for long-term stability of the medical insurance system [Internet] 2021. Available from: https://www.mhlw.go.jp/stf/seisakunitsuite/bunya/kenkou_iryou/iryouhoken/index.html [Accessed: 2021-5-24]

[4] OECD. Health at a Glance 2013 (Report) [Internet]. 2021. Available from: https://www.oecd.org/els/health-systems/Health-at-a-Glance-2013.pdf [Accessed: 2021-5-24]

[5] Cecere D. New study finds 45,000 deaths annually linked to lack of health coverage. Harvard Gazette [Internet]. 17 September 2009. Available from: https://news.harvard.edu/gazette/story/2009/09/new-study-finds-45000-deaths-annually-linked-to-lack-of-health-coverage/ [Accessed: 2021-5-24]

[6] Woolhandler, S. Despite slight drop in uninsured, last year's figure points to 48,000 preventable deaths. in Physicians for a National Health Program [Internet]. 9 December 2012. Available from: https://pnhp.org/news/despite-slight-drop-in-uninsured-last-years-figure-points-to-48000-preventable-deaths-health-expert/ [Accessed: 2021-5-24]

[7] Kelley A S, McGarry K, Fahle S, Marshall S M, Du Q, Skinner J S: Out-of-Pocket Spending in the Last Five Years of Life. Journal of General Internal Medicine. 2012; 28 (2): 304-309. doi:10.1007/s11606-012-2199-x.

[8] Barnard C I. The Function of the Ex ecutive. Harvard University Press; 1938.

[9] Drucker P F. The Practice of Management. Harvard University Press; 1954.

[10] OECD: OECD Health Statics [Internet]. 2020. Available from: https://www.oecd.org/els/health-systems/health-data.htm [Accessed: 2021-5-24]

[11] WHO. Measuring Overall Health System Performance For 191 Countries [Internet]. 2020. Available from: https://www.who.int/healthinfo/paper30.pdf [Accessed: 2021-5-24]

[12] Eric C S, Dana O S, David S, Arnav S, Michelle M D. The Commonwealth Fund. The US Health System Falls Short [Internet]. 2021. Available from: https://interactives.commonwealthfund.org/2017/july/mirror-mirror/ [Accessed: 2021-5-24]

[13] BuzzFeedNews. Riko Muranaka: A doctor and journalist who has verified the safety of the HPV vaccine, is commended by the leading overseas scientific journal Nature [Internet]. 2017. Available from: https://www.buzzfeed.com/jp/naokoiwanaga/rikomuranakajohnmaddoxprize?utm_term=.ieMJdOwV7#.gaoQYkO8B [Accessed: 2021-5-24]

[14] Porter M, Teisberg E, Olmsted T. Redefining Health Care: Creating Value-based Competition on Results. Boston: Harvard Business Press; 2006.

[15] The Foundation for Research on Equal Opportunity. Improving Hospital Competition: A Key to Affordable

Health Care —— Reversing a decades-long trend towards hospital consolidation will reduce health costs for patients [Internet]. 2017. Available from: https://freopp.org/improving-hospital-competition-a-key-to-affordable-medicine-343e9b5c70f [Accessed: 2021-5-24]

[16] World Health Organization (November 22, 2010). The world health report: health systems financing: the path to universal coverage. Geneva: World Health Organization. ISBN 978-92-4-156402-1. [Internet]. 2010. Available from: https://www.who.int/home/cms-decommissioning [Accessed: 2021-5-24]

[17] Takayama Makoto, Umeda M. Particularities and strategic management of healthcare business. Office Automation,. 2003: Vol. 24, No. 3, pp.11-16,

[18] Takayama, Makoto: Management in Strategic Space: Dynamics of Center-Periphery Relationships. Journal of Information and Management, 2020. Vol. 40, No.3, pp. 96-106.

[19] Takayama Makoto, Watanabe C, Griffin C: Myth of Market Needs and Technology Seeds as a Source of Product Innovation--- An Analysis of Pharmaceutical New Product Development in an Anti-hypertensive Product Innovation. Techonovation, Elsevier, 2001; Vol. 22, pp.353-362.

[20] Takayama Makoto: Win without Fail and Fail without Win in Bio-Management: Revenge of Success, Office Automation. 2005. Vol. 25, pp.15-21.

[21] Takayama Makoto. Law of win without fail and lose without win in Japan Society for the Study of Business Administration ed. Innovation of Japanese firms, Japan Society for the Study of Business Administration: 2009; pp. 62-67.

[22] Takayama Makoto. Law of Success or Failure in the High Tech Driven Market - 'Revenge of Success' in the Biotech, Nanotech, and ICT Industry. In Igor Furstner ed. Products and Services from R&D to Final Solutions: SCIYO, 2010, p. 15-36. DOI: 10.5772/10402. Available from: https://www.intechopen.com/books/products-and-services--from-r-d-to-final-solutions/law-of-success-or-failure-in-the-high-tech-driven-market-and-bio-industry [Accessed: 2021-7-1]

[23] Takayama Makoto. Points for cooperation and unification of intentions between departments when selecting KOL. in Tips for selecting accurate personnel and building good relationships with KOL doctors Technical Information Institute.

[24] Global Use of Medicines in 2020. Report by the IMS Institute for Healthcare Informatics. IMS [Internet]. 2015. Available from: https://www.iqvia.com/-/media/iqvia/pdfs/institute-reports/global-medicines-use-in-2020 [Accessed: 2021-5-24]

[25] Thomas C R, Robert L, Matthew J A W: Advances in oligonucleotide drug delivery, Nature Reviews Drug Discovery: 2020; volume 19, pp. 673-694.

[26] Takayama Makoto: Open and integral innovation on tablet PC by popularized advanced media as industrial cradle: In Constantin Volosencu ed. New Technology: InTech; 2012. pp. 379-396. DOI: 10.5772/32764. Available from: https://www.semanticscholar.org/paper/Open-and-Integral-Innovation-on-Tablet-PC-by-Media-Takayama/c58e0e86f7689770f916b02005798e7f2a157d67 [Accessed: 2021-7-1]

[27] Takayama Makoto, Fukushima M: Instant Innovation from Experiment to Implementing New Technology. Journal of Japan Society for Information and

Management. 2014: Vol. 34, Number 3, pp.86-102.

[28] Fujita M, Takayama Makoto: The Osmosis of instant innovation by mobile devices. Journal of Japan Society for Information and Management. 2015: Vol. 35, Number 4, pp. 72-80.

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