Sudden Decline of Flying-Boat Commercial Airlines in 1950s:
Its Cause and Implications for Revival

Yoshihide Horiuchi
Shibaura Institute of Technology, Tokyo, Japan

1930s was the golden age for the flying-boat airlines in the world, notably the Pan Am Clipper transpacific and transatlantic routes, and the (British) Imperial Airways UK-Africa and UK-Australia/Far East routes. The major advantage of the flying boats was its endless runway (i.e., ocean or lake) and resultant possibilities for larger aircrafts than land-based airliners. Airlines such as Pan Am made large investments in the 1930s for flying boats, their special terminals by the water, and the worldwide flying-boat air route network. However, in the late 1940s to early 1950s, the flying boats suddenly disappeared due to the rapid development of land-based large airliners and long runways, according to the previous studies. The author conducted historical research on this topic, and found another reason: rapid decline in the high-income population who used to travel by flying boat scheduled flights. Also found was a recent surge of the luxury market, and steady increase in the cruise-ship passengers. Hence, there could be implications for revival of the flying boat flights as luxury cruise, rather than as scheduled flights.

Keywords: flying boat, ocean liner, cruise, scheduled flights, hedonic consumption

Introduction

Flying boat was a popular mode of air travel in the 1930s among the wealthy people for transatlantic, transpacific, Europe-Africa, and Europe-Australia/Far East routes. In those days, realistic travel options in such long-distance routes are ocean liners or flying boats. In the late 1930s, flying-boat scheduled flights flourished, especially with the (British) Imperial Airways and Pan American World Airways. Both airlines made large investments on flying boat purchases as well as its infrastructure including hotels and flying-boat amphibian terminals. The future of flying boat air travel looked promising by the end of the 1930s. There were no land-based airliners that can match sufficient range or large enough payload of the flying boats then. In addition, there were few airports with long runways for long-range, land-based airliners. Hence, flying boats were realistic choice for long-distance flights. However, flying boats tend to be more expensive to operate compared to land airplanes, for anti-corrosion, water-proof treatment, engine maintenance, etc..

However, in the late 1940s and early 1950s, most of the flying-boats scheduled flights were suddenly terminated in a very short period of time due to the development of more economical, land-based airliners, and airports with long runways during the World War II. The author conducted historical research on this topic, and
found an alternative explanation on the decline of flying boat airlines: A rapid decline of the rich market after World War II had a significant impact on the flying boat commercial airlines.

**Research Goal: Identifying Real Appeals of Luxury Flying-Boat Flights in the Past and the Future**

There have been studies on the historical development of flying boats in commercial airlines. These studies tend to focus on the technological aspects of flying-boat development, or airline business aspects of flying-boat operations. The focus of this research, is the past, present, and future of luxury air travel, with a particular emphasis on the flying-boat luxury air travel, by historical studies of the relevant literature and facts. It appears that this kind of research has not been conducted yet.

In the late 1930s, long-distance air travel meant travelling by flying boats, which satisfied both functional air transportation needs and luxurious travel needs. Those days, for long-distance travel, realistic options were ocean liners or flying boats. When the flying boats suddenly disappeared from scheduled flights in the late 1940s to early 1950s, luxury air travel also became a minor part of air travel, lasted as the first class. In 1958, when air travel suppressed ocean liners in the number of transatlantic passengers, air travel—though still expensive from today’s standards—became a common mode of long-distance travel. Even though luxury air travel lasts as the first class, it is no match against the luxury in the flying-boat travel. Flying-boat air travel has a unique combination of luxury of ocean liners, reasonable speed of air travel, and very nice altitude to enjoy the view—not as high as jets, but high enough for a wide panoramic view. The research goal was to identify the causes for the rapid demise of the flying boat scheduled flights, and combine such findings with recent surge in the luxury market and cruise-ship market. There could be implications for revival of the flying-boat flights as luxury cruise, rather than as scheduled flights.

**Relevant Studies: Hedonic Aspects of Transportation Needs and Tourism Needs**

In this chapter, the author shows studies on the two reasons for traveling: (1) Physical needs to travel to a certain destination. (2) Enjoyment of the process of travel itself. Cruise ships and cruise trains, both are gaining popularity nowadays, are good examples of the latter (Horiuchi, 2000).

Past studies as well as BOAC (Imperial Airways became British Overseas Airways Corporation in 1939) and Pan Am managements state the reasons for the essential demise of flying-boat scheduled flights in the late 1940s to early 1950s: Higher operating and maintenance costs of flying boats compared to land-based airliners. However, the author argues that another factor was a rapid decline of the high-income market. In the recent surge of the luxury consumers, the situation is changing in favor of the flying-boats luxury air travel, the author argues. The author considers a potential for the luxury flying-boat revival by a paradigm shift of the airlines/tourist industries with the flying boats from the scheduled flight to luxury flying-boat cruise.

When we travel, sometimes we do so not only for functional needs to reach the destination, but also for the enjoyment of the traveling process itself. The author calls such needs as the hedonic aspects of transportation needs. Such needs exit in our apparently functional trips such as commuting to work, business trips, etc., the author considers. If that is the case, future transportation planning needs to take into account both functional and hedonic aspects of transportation needs, and tourism needs. Hedonic aspects of transportation needs are related to
Tourism is defined as: “The business of providing services for people who are traveling for their vacation” (Macmillan Essential Dictionary, 2003). Hedonic aspects of transportation needs seem to be an area that awaits further research. What we need is a scheme to measure the demand for the hedonic aspects of transportation. Horiuchi (1998) argues that hedonic values can be measured with (1) product physical attributes, (2) consumers’ personal traits, (3) consumption contexts. For example, when one commutes from home to office by a nice train, there is functional/physical need to go to the office, as well as hedonic aspects of enjoying the trip (Horiuchi, 1998).

**1920s: Pan Am Founder Juan Trippe’s Idea of Inflight Services and Accommodations Patterned After Luxury Ocean Liners**

We found out that it was the idea of Pan Am founder Juan Trippe to pattern the airline inflight services and accommodations after those of the ocean liners. This is why we see an airline “captain” in an ocean-liner-captain-like uniform, rather than “pilot” with a leather jacket and scarf. The aircraft is called “ship”, and the cabin attendant “pursers”. Pan Am also built a luxury white terminal called “Diner Key” in Miami, Florida, which was the headquarters of Pan Am at that time (Hoashi, 2010, pp. 52-53).

In 1925, the transatlantic sea lines flourished with many luxury ocean-liners with over one million passengers traveling annually, out of which over 180,000 took the first class cabin. Also the needs for transpacific sea lines were expected to considerably grow in the future (Hoashi, 2010, p. 55). In the late 1920s to early 1930s, major competitors in the transatlantic travel were ocean liners, flying boats and airships. Airship Graf Zeppelin was operating 139 transatlantic flights, carrying 17,591 passengers (Gandt, 1991, p. 67). The unfortunate explosion of the airship Hindenburg was caused by its hydrogen gas. Because the U.S. did not export nonflammable helium gas, Hindenburg had to use highly flammable hydrogen gas. After this explosion, airships lost their travel popularity.

**1930s: Golden Age of Flying-Boat Scheduled Flights**

Late 1930s was the golden age of flying-boat scheduled flights. In 1936, by the request of the Imperial Airways, Short designed the Empire-Class flying boats which changed the flying-boat cabin concept (see Figure 1). It has two decks with a promenade cabin, sleeping berths, regular seats, and a galley. Imperial Airways operated UK-Africa and UK-Australia/Far East routes with their Short Empire Class (also called the Short C Class) flying boats. Airlines provided luxury meals and services in the flying boats (see Figures 1 & 2). Flying boats used to fly in daylight, and passengers stayed overnight at luxury hotels.

**Pan Am China Clipper Fever**

Pan American built a special flying-boat amphibian terminal in New York and other cities, and had the flying boats developed for Pan Am’s specifications, and built luxury hotels for overnight stays of flying-boat passengers, etc. In other words, Pan Am built extensive infrastructure for their worldwide flying boat operations. Imperial Airways also made such extensive investments for their flying boat operations.

In 1935, by Pan Am’s request Martin produced an M-130 flying boat, then the largest aircraft in the U.S.. Gandt (1991) wrote, “To depression-weary Americans, the new Martin Clipper possessed magical qualities…. She was a fantasy craft, a magic carpet built and flown by Americans, destined for adventure” (p. 106). In
September 1935, Pan Am’s Martin 130 “China Clipper” flew from California to Asia in six days, which was quite remarkable, compared to 14 days by ocean liners. “A *China Clipper* craze swept away the country”. Magazine articles, new songs, even new dance steps and a Warner Brothers movie “China Clipper” starring Humphrey Bogart appeared (Gandt, 1991, pp. 106, 109) (see Figure 3).

*Figure 1. Imperial airways routes in 1935. Source: Imperial Airways, Wikipedia.*

*Figure 2. Luxurious interior of TEAL short Solent flying boat. Source: Short Solent, Wikipedia.*
British-built flying boats were less profit-making than the U.S.-built flying boats. The Short S-23 Empire Class boats had a load-to-tare ratio of 25:75, while the U.S. Sikorsky S-42 flying boat had a 42:58 ratio, “meaning that nearly half the aircraft’s total weight amounted to fuel and payload” (Gandt, 1991, p. 85).

**Pan Am “Clipper” Operates in Both Transatlantic and Transpacific Routes**

In 1939, Pan Am started operating their first two Boeing 314 flying boats in the transpacific route. Boeing 314 had a dining room, sleeping cabins, a lounge, a galley, etc., like a luxury ocean liner. It was built by the RFP (Request for Proposal) by Pan Am with cruising speed of 295 km, a range of 7200 km, and can carry 74 passengers maximum. Pan Am also started transatlantic services with Boeing 314 in 1939 in the New York/Boston—Southampton/Marseilles routes. Thus, Pan Am, with their clipper flying boats, became the world’s first airline to operate both transatlantic and transpacific routes in 1939 (Hoashi, 2010, pp. 92-98). For long-distance flights, B-314 could carry 34 passengers in luxurious sleeping berths. B-314 had load-to-tare ratio of 41:59, which was quite a high profitability then (Gandt, 1991, p. 137).

The fare was quite high. For example, the New York-Southampton air fare was US$375 one-way, and US$675 roundtrip. It was US$950 for San Francisco to Hong Kong in the 1930s, which was close to a price of a house in the U.S. then (Gandt, 1991, p. 109). Pan American could make a profit with six passengers in their Boring 314 flying boats.

**Late 1940s to Early 1950s: Sunset for Flying-Boat Scheduled Flights**

Flying-boat operations tend to be more costly than land-based airliners, for anti-corrosion, waterproofing, maintenance, etc. In this chapter, we observe the end of the golden days of flying boat scheduled flights, which suddenly came in the late 1940s to early 1950s. Airline managements and previous studies often cite the development of the land-based airliners and airports with long runways during the World War II as causes for such demise.

Amazingly, 792 Short flying boats were produced. Most of them are the Short Sunderlands for the Royal Air Force. After WW II, Short produced civilian versions of the Sunderland called Short Sandlingham and Short Solent flying boats (Gandt, 1991, p. 163). After World War II, many surplus land airplanes (and flying boats) were sold by the U.S., U.K. and other governments.

On April 8, 1947, Pan Am ceased B-314 flying-boat transpacific operations which they resumed only five months earlier. One reason for this is difficult access of flying boats in busy seaports such as Hong Kong, Shanghai, and Tokyo. Another reason was development of long-range land-based airliners during the World War II (Hoashi, 2010, pp. 106-107). It is interesting that Pan Am, who made large investment in the flying-boat operations infrastructure, so quickly abandoned the flying-boat scheduled flights and switched to the land-based airliners.

In 1947, Pan Am’s first land-based airliner DC-4 flight from San Francisco via Honolulu and Wake landed at the Tokyo Haneda International Airport. With the land-based airliner DC-4, compared to the Boeing 314 flying boat, the flight time between the U.S. west coast and Honolulu was reduced from 20 hours to 10 hours, and the one-way air fare was reduced about 30% from US$278 to US$195 (Hoashi, 2010, pp. 109-111). Meanwhile, in
the U.K., BOAC (Imperial Airways became British Overseas Airways Corporation in 1939) Chairman Whitney Strait decided to replace flying boats with landplanes for higher profitability (Woods, 1997, p. 69). BOAC’s last flying-boat scheduled flight took place on November 3, 1950 with its Southampton to South Africa route, taking four and a half days. It was reduced by half with the land-based airliners. Air France was operating the Late 631 flying boats from 1942 until the late 1940s (Gandt, 1991, p. 164).

Knott (2011) summarizes the end of the flying boat era: “(T)he way that the cutting edge of flying boat technology trumped the airship, and then—so soon—fell an obsolete victim to the Lockheed and Comet, land-based airliners, the start of the process whereby flying became just plain ordinary” (Knott, 2011, p. 231).

1940s to 1950s: New Flying-Boat Developments

It is ironical that airlines lost their interests in the flying boat operations, when there were several ongoing new flying-boat development projects in the U.K. and U.S..

Saro Princes: A Giant Turboprop Flying Boat in U.K.

Saro Princes flying boat, for the BOAC specifications flew on August 22, 1952. It was a six-engined turboprop, double-decker flying boat. It was conceived by the British Government Brabazon Committee, as one of the post-WW II six major aircraft development projects in order to maintain the British aircraft manufacturing lead in the world. Lord Brabazon of Tara made the following speech at the House of Lords in February 1956, “We are a great sea empire. The flying boat should be our particular brand of aircraft” (Knott, 2011, p. 229). However, BOAC lost its interests in flying boats right after the World War II. In addition, Saro Princes had problems with its under-powered engines, and it never entered commercial service (Knott, 2011, pp. 220-221).

Flying Boat Development in the U.S.

There were also several flying-boat developments in the U.S., such as the Martin 170 series. Martin produced six of them for the U.S. Navy with 87,000 flying hours without accidents, carrying over 200,000 passengers. Yet the operating and maintenance costs of flying boats were much higher than land-based airliners. Thus, flying boats were not considered for operations by commercial airlines in the post-World War II era (Gandt, 1991, pp. 168-170).

Decline of High Income Populations

Airline managements as well as historical studies state the cause for the demise of flying boat scheduled flights as: high operating and maintenance costs of flying boats and rapid development of land-based airliners and airports with long runways during the World War II. The author argues that in addition to such airlines’ operational matters, rapid decline of the high-income population from the 1930s to the 1960s was another major contributing factor.

Stark (1972) notes, “The … conclusion concerns the relative size of the high and low incomes. The former accounts for only a very small and steadily declining portion of the total inequality” (p. 47). Also, “I think we can safely conclude that the degree of inequality and probably dispersion was much less in 1963 than 1937” (p. 111). This study was about the UK, but we can see that the high-income population was declining between 1937 and 1963, and that the inequality among the income groups was higher in 1937 than in 1963.
Luxury Flying Still Going

Luxury experience of flying-boat scheduled flights of the late 1930s, with ocean-liner like accommodations in the cabin and luxury hotel overnight stays was gone. Even though air travel became the most popular mode of transportation for a long-range travel, there was still a demand for luxury air travel. It was Pan Am who introduced luxury flying in the Boeing 377 Stratcruiser which they nicknamed “Flying Hotel” in the late 1940s, and the Boeing 747 Jumbo Jet with its upper-deck first-class lounge in 1970.

Pan Am’s Boeing 377 Stratcruiser “Flying Hotel”, had 27 sleeping berths, 39 sleeplet reclining seats, 87 seats, a bar counter and a lounge. It has a pressurized cabin with cruising speed of 540 km/h. This Stratcruiser changed the concept of long-distance flights (Hoashi, 2010, pp. 140-142). Also, several airlines introduced the first-class lounges in the DC-7C piston-engined airliner such as the United Airlines, and DC-8 jet airliner such as the Japan Air Lines in the 1950s to 1960s.

In 1958, land-based airliners took over ocean liners as the most popular mode of transatlantic travel, and ocean liners are converted to cruise operations. Since then, ocean-liner operating companies shifted their major business from scheduled ocean liners to cruise operations. Flying became a common mode of transportation. Yet, there was still a demand for luxury travel.

When Pan Am became the launch customer of the Boeing 747 Jumbo Jet in 1970, Pan Am again changed the concept of long-distance flight. The first-generation B-747s had a first-class lounge on the upper deck (Hoashi, 2010, pp. 200-201). When the author took a United B-747 flight from Los Angeles to Washington, D.C. in August, 1970, it had a lounge even for the economy class with a piano and a bar. In the beginning of the wide-body jet age, airlines provided ample relaxing space even for the economy-class passengers.

There was another kind of impact by B-747 on the air travel market. When Pan Am introduced the B-747 with a large capacity for passengers, travel agencies started offering package tours to fulfill the large cabin. This not only popularized air travel, but also changed the nature of air travel from special trips for the few, wealthy people to everybody’s fast, convenient travel form. Yet, the author considers a possible demand for romantic, luxury style of air travel in the flying boats, which has not been satisfied since the demise of flying-boat scheduled flights in the late 1940s to early 1950s. Recently, several airlines started operating the new Airbus 380 double-decker wide-body aircraft with a luxury first-class cabin. Hence, we see an increasing demand for luxury air travel today.

Flying Boats and Their Current Status

In this chapter, we see that the flying-boat commercial operations might have an opportunity for revival.

Flying boats remained in passenger-carrying services in Australia and New Zealand until June 1974 (Gandt, 1991, p. 164; Knott, 2011, p. 229). Air International coordinating editor David Oliver (1999) writes:

At the end of the twentieth century..., there are more nearly 300 multi-engine flying boats in service which bodes well for the breed, if we bear in mind that in the late 1930s, regarded as the golden age of the flying boat, there were fewer than 500 multi-engine ‘boats in military and commercial worldwide operations. (p. 116)

Hence, the author agrees with Oliver’s (1999) conclusion:
The facts are that 70% of the world’s surface is covered with water and that 90% of the world’s economic activity on land takes place within 150 miles of the sea. Most of the world’s capital cities are situated on the coast or on the banks of a river, while water runways cannot be destroyed by natural disasters or bombs. In spite of earlier predictions, wings on water are here to stay. (p. 177)

Oliver (1987) also noted: “(The flying boat’s) true world is only now being recognised and the type’s development over the next fifty years will hopefully ensure the preservation of the species” (p. 141). Oliver (1987) wrote:

The development of the reliable and economical turboprop engines in recent years has led to a new lease of life for the flying boat and amphibians. The turboprop has encouraged new designs in both cost and performance, while remaining the unique capacity of operating from either land or water. (p. 10)

Hence, the situations are changing in favor of the flying boats nowadays: (1) development of turboprop engines that are more economical than the piston engines, (2) development of navigation aids. Oliver (1987) cited the reasons for his optimism:

Bad weather and darkness have in the past severely limited flying boat operations, both commercial and military. Costly overnight stops on BOAC’s flying boat routes were one of the main reasons put forward by the corporation for ceasing flying boat operations in 1950. Future amphibious passenger and cargo operations should be able to fly to and from amphiports throughout the hours of darkness unhindered by the noise restrictions and traffic delays. (p. 143)

Also, Shin Maywa, a leading Japanese flying-boat manufacturer for over 80 years, is producing flying-boats that can take off and land in the high sea.

Shin Meiwa (US-1 and US-S Rescue Flying Boats) was a generation apart from earlier types. And to land a 32-ton flying boat in sea state 5-rough sea, waves eight to thirteen feet high (2.4 to 3.9 m) — at a speed of only 45 knots. (Oliver, 1987, p. 130)

Hence, the author argues that the flying-boat operations could become a profitable option again for commercial airlines, if they can capture a suitable market.

**New Market for Flying-Boat Operations**

In this chapter, we see the recent rapid growth in the luxury market, and also rapid increase in the cruise-ship market. From these facts, the author argues that there is a possibility for revival of flying-boat trips as cruise, rather than as regular, scheduled flights. There is also evidence that the contemporary flying boats will be less costly to operate and maintain than those in the 1950s, due to the development of new technologies such as turboprop engines, and new avionics. Therefore, the author concludes that time is ripe for introduction of luxury flying-boat cruise.

As we see, in the 1930s, ocean liners and flying boats were the two alternatives for the wealthy to travel transoceanic. During the World War II, land-based airliners as well as airports with long runways were rapidly developed. From the late 1940s, land-based airliners took over the flying boats for scheduled transoceanic and other long-distance flights for more economical operations. Land-based airlines became a major mode of scheduled flights, taking over the flying boats in the late 1940s to early 1950s. Then, as the jet age began, travel by flying became a common mode of transoceanic travel, taking over the ocean liners in 1958. Ocean liners were converted from regular scheduled service to cruise operations. Somewhere in these important transitions in the transoceanic travel, flying boats as well as ocean liners lost the luxury travel market. One reason for such a
The sudden decline seems to be a shrinking high income population from the 1930s to 1960s. The author argues that such a situation is changing now, with a growing number of potential customers in the luxury market as evidenced below.

**Rapid Expansion of Cruise Ship Market**

Luxury cruise ships are very popular nowadays (Shirai, 2012). Also, luxury trains have been popular, such as the famous Orient Express. In Japan, the Cassiopeia is a luxury train connecting Tokyo and Sapporo with a luxury dining car and sleeping compartments. Also, Japan Rail (JR) Kyushu (in the southern island of Kyushu) started operating the luxury Nanatsubosnhi (Seven Stars) luxury train in October, 2013, which combines the luxury train and luxury travel from this train (Ishihara, 2013).

Shirai (2010) finds that the world cruise passengers almost doubled from 1995 of 5.67 million to 2,000 of 9.61 million (p. 61) Also, the cruise market consists of (1) luxury market of about 5% (800,000 passengers), of US$400 and up per night; (2) premium market of about 10% (1.6 million passengers), of US$200 and up per night; and (3) casual (mass) market of about 85% (13.6 million) of US$70 and up per night (Shirai, 2010, p. 62).

Iida (2011) notes that about 20 million passengers in the world took cruise ships in 2008, out of which, about 13.5 million (63.8%) are Americans, about 1.5 million are British, and about 1 million are Germans.

**Keidanren (Japan Economic Federation): Promotion of Cruise Industry**

Keidanren (2013) issued a proposal, “Seeking Strategic Promotion of Cruise Industry”, to promote foreign cruise ships bound for Japan.

In Asia, the number of people using cruise services has been rapidly growing along with income increases…. (O)ne port call by a huge cruise ship carrying several thousand passengers is capable of generating economic effects of over 100 million yen. (Keidanren, 2013, p. 1)

**Japanese MLIT Report on Record Number of Cruise Ship Visits to Japan**

Japanese Ministry of Land, Information, Transport and Tourism (MLIT) reported that in 2012, a record 1,105 visits of foreign and Japanese cruise ships to Japanese ports. Also, MLIT reports that the number of Japanese cruise passengers in 2012 was 217,000, up 16.2% from 2011 (MLIT, 2013).

**Successful Debut of Luxury Cruise Trains in Japan, the Seven Stars**

In Japan, JR Kyushu started operations of the Nanatsubosnhi (Seven Stars) luxury train cruise in Kyushu Island in October, 2013, charging JPY980,000 yen per person (about US$10,000) maximum for a tour of four days three nights. There were 7.3-9.6 times competition to purchase its ticket. (JR Kyushu, 2013). Ishihara (2013) considers reasons for the success of the Seven Stars as: (1) episodes the passengers want to tell others, (2) full of Japanese hospitality experience in the package tour.

**Emergence of New Luxury Market**

According to Silverstein and Fiske (2004), there are about 122 million Americans (about 47 million households) who earn not less than US$50,000 a year, who are willing to buy one-rank up goods and services and they can afford it. In 23 product/service categories, sales of new luxury items are US$35 billion, which is 19% of the total annual sales of US$180 billion in these 23 categories, and the former is increasing 10-25% annually (Silverstein and Fiske 2004, pages 13 and 16).
Conclusion: Luxury Flying Boat Cruise

The author’s proposition is that today, there are two types of potential demands for commercial flying-boat operations: (1) To the destinations that are better served by flying boats than land-based airliners; (2) Flying-boat cruise, which is faster than cruise ships, but has luxury atmosphere similar to the cruise ships, far more luxurious interior and services than the first class of land-based aircrafts such the A-380 and B-747-800.

This flying boat cruise will be a totally new concept. Hence, traditional, scientific marketing research will not likely to provide much help for demand projection. Rather, it is a matter of designing the flying boat luxury cruise.

In the two classes, the author is teaching at Shibaura Institute of Technology, Graduate School of Engineering Management in Tokyo, students in Idealized Systems Design course came up with an idea of luxury flying-boat cruise in Japan, with modified four-engine Shin Maywa US-2 rescue flying boat, in the Spring Semester, 2013. Also, in the marketing class, the students came up with a detailed marketing plan for luxury flying-boat cruise in Japan for the world wealthy market.

The timing could be right for start designing such a luxury flying-boat cruise as Idealized Systems Design.

The design of a desirable future is best carried out when it is imbedded in an idealized redesign of whatever is being planned for…. Such a redesign is an explicit statement of the designers would have now if they could have whatever they wanted. (Ackoff, 1978, pp. 26-27)

This is the direction the author intends to follow as the next step of this research on the idealized design of flying boat and luxury flying-boat cruise.

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