**How the lost e-mail message "Across the Great Wall…" brought people together**
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## I. General Overview

The famous e-mail message "Across the Great Wall we can reach every corner in the world" has come to stand for China's entry into the Internet community. It was typed in on Sep. 14 and sent out on Sep. 20, 1987. There were thirteen signers of that message. Six were from a German team and seven from a Chinese team.

When Jay Hauben did online research in 2004 about the first e-mail message it took him mostly to web sites in China. The story told there gave most credit for the China-CSNET connection to a Chinese engineer, Qian Tian Bai but his name was not on the original e-mail message. Also missing from the history on the websites in China was any credit to Professor Wang Yuen Fung whose name headed the Chinese team or to Professor Werner Zorn whose name headed the German team. .

Fifteen years passed, before the first attempts were made to bring more light into the past of the adolescent Chinese Internet. All three authors of this paper became involved and now try to outline how that e-mail brought people together, not only in researching the history later, but also from the very first moment after the e-mail being sent from Beijing over Karlsruhe to key persons in the US and Europe, who distributed the mail within the inner circle of decision makers in the emerging Internet.

Twenty years later, on Sept. 19, 2007, at a celebration of the China-CSNET connection, those key persons joined by Madame Hu Qiheng, president of the Internet Society of China, had a panel discussion at the HPI in Potsdam Germany, where they revealed their memories.

Before this is reported, we go back in history by several centuries with the following story:

Before Fernando Magellan started his tour around the world in August 1519 from Seville, Spain, he had to hire the staff for the 5 ships of his expedition. Among the candidates was one young Italian nobleman, who had served in the Vatican state department before and eagerly wanted to join the crew. Being interviewed about his intentions by Magellan, he answered with a legend from Alexander the Great and his court jester. When Alexander one nice day asked the jester, what he is doing all day long, he answered: "I keep track and write down everything what you are doing in favour of your fame and glory." Alexander laughed: "My glorious deeds are known by everyone from one end of the world to the other - without your writings." The jester replied: "Today they are known, but what will be in 1.000 years?" Magellan hired him and that's why his 3 year expedition is the best known of that historical epoch.

It may appear inappropriate to list the "Across the Great Wall…" mail in one breath with Magellan and Alexander the Great, even though the mail also cruised across the world, but the lessons learned are similar: what is not reported is not remembered as if it has not happened.

In case of the "Across the Great Wall…" – project , everything relevant between 1983 – 1987 was documented, not by some court jester, but by Prof. Zorn himself in most detail and published very soon in spring 1988 [ZW1988]. This article provoked a reader's comment:
*„…Less glorious appears the lengthy presentation of China's connection to international computer networks. This information could have been summarized in 2 pages instead of being expanded by a great number of unimportant details up to 8 pages. This style is under the quality level of your magazine…."*

A lesson to be learned from this: IT-people are used to writing down specifications and results, but not the historical way these were achieved.

The history documented by Prof Zorn deserves a brief summary since it contains some other general lessons.

**II. The 1983-1987 Birth of the China-CSNET E-mail Link**
From 1983 to 1987, a Chinese-German international collaboration prepared an e-mail link between the People's Republic of China and the Federal Republic of Germany. The link would allow China to participate in the CSNET, an international e-mail network. The collaboration was headed by Professor Zorn at Karlsruhe University on the German side and Professor Wang Yuen Fung, Senior Advisor of the Institute for Computer Applications (ICA) in Beijing on the Chinese side.

In 1982, the World Bank Chinese University Development Project I was allotted $200 million. It used some of that money for the import into China of 19 Siemens BS2000 mainframe computers manufactured in Germany. One of these Siemens computers was delivered to the ICA. As part of the project, Professors Zorn and Wang collaborated to organize the first Chinese Siemens Computer Users Conference (CASCO – Symposium '83) which took place in September 1983. At the conference, Professor Zorn led a seminar on the German Research Network project. One of the Chinese interpreters challenged Professor Zorn, remarking that lecturing was not enough. Would Professor Zorn do something more for China? That planted the seed that grew into the Chinese-German computer networking collaboration which developed the e-mail link based on the Siemens BS2000 computers installed at the ICA in China and in the Karlsruhe University in West Germany.

For three years, work was done at Karlsruhe and at the ICA to make a permanent link possible. In late summer 1987, Professor Zorn was in Beijing for the third CASCO conference but also to work with the staff of the ICA to set up the e-mail link between China and Germany. His team at Karlsruhe University had succeeded in getting the CSNET protocols to work on their Siemens BS2000 computer. Now those protocols had to be implemented on the Siemens BS2000 computer at the ICA in Beijing.

In a little over two weeks, September 4 to 20, 1987 the Chinese and the German teams implemented within the operating system of the ICA Siemens BS2000 computer the necessary protocols, installed the necessary communications equipment and overcame the many technical problems to make possible CSNET e-mail connectivity with Karlsruhe.

On September 14, 1987, the joint German and Chinese team composed an e-mail message with the subject line, "First Electronic Mail from China to Germany". The message began in German and English "Across the Great Wall we can reach every corner in the world." Not only was the message addressed to Karlsruhe in Germany, it was also addressed to CSNET computer scientists, Lawrence Landweber and David Farber in the US and Dennis Jennings in Ireland. It was signed by Professor Werner Zorn for the University of Karlsruhe Computer Science Department and Professor Wang Yuen Fung for the ICA. Eleven coworkers are also listed as signatories, suggesting the complexity of the task. But they could not send the message they composed. To their great disappointment, the message failed to leave China. There was a last technical problem to solve. It was solved and successful connectivity was achieved in a few more days. On September 20, 1987, the first CSNET e-mail message, the one composed on September 14, was sent.

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(Message # 50: 1532 bytes, KEEP, Forwarded)
Received: from unika1 by iraul1.germany.csnet id aa21216; 20 Sep 87 17:36 MET
Received: from Peking by unika1; Sun, 20 Sep 87 16:55 (MET dst)
Date:   Mon, 14 Sep 87 21:07 China Time
From:   Mail Administration for China <MAIL@ze1>
To:     Zorn@germany, Rotert@germany, Wacker@germany, Finken@unika1
CC:     lhl@parmesan.wisc.edu, farber@udel.edu,
        jennings%irlean.bitnet@germany, cic%relay.cs.net@germany, Wang@ze1,
        RZLI@ze1
Subject:  First Electronic Mail from China to Germany

"Ueber die Grosse Mauer erreichen wie alle Ecken der Welt"
"Across the Great Wall we can reach every corner in the world"
Dies ist die erste ELECTRONIC MAIL, die von China aus ueber Rechnerkopplung
in die internationalen Wissenschaftsnetze geschickt wird.
This is the first ELECTRONIC MAIL supposed to be sent from China into the
international scientific networks via computer interconnection between
Beijing and Karlsruhe, West Germany (using CSNET/PMDF BS2000 Version).

   University of Karlsruhe        Institute for Computer Application of
 -Informatik Rechnerabteilung-    State Commission of Machine Industry
        (IRA)                     (ICA)
   Prof. Werner Zorn              Prof. Wang Yuen Fung
   Michael Finken                 Dr. Li Cheng Chiung
   Stefan Paulisch                Qiu Lei Nan
   Michael Rotert                 Ruan Ren Cheng
   Gerhard Wacker                 Wei Bao Xian
   Hans Lackner                   Zhu Jiang
                                  Zhao Li Hua
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Fig. 1: "Across the Great Wall…" e-mail from Sept. 14/20, 1987

The CSNET node in Beijing was, with this first e-mail message, fully integrated into CSNET and via CSNET to the rest of the e-mail world. With this first e-mail node in China, a step was taken for the people of China to begin online communication with people around the world. This was not an Internet connection yet but a very important first step.

Twenty years later, at the celebration of this first step, Mdm. Hu Qiheng representing the Internet community in China presented a souvenir from China to Werner Zorn, Lawrence Landweber and Stephen Wolff as representatives of the international Internet pioneers. In her presentation she emphasized what Professor Zorn also stressed:

"The international collaboration in science and technology is the driving force for computer networking across the country borders and facilitating the early Internet development in China. . . The Internet is changing the world, also China, opening the door to the information society. We're grateful to the Internet creators. We're grateful to the world Internet community; so many colleagues from different corners of the world have provided their help and support for the Internet to develop in China."[HQH2007]

Mdm Hu had expressed what the work of Profs Zorn and Wang exemplified and what had been missing in the story in China until 2007. The Internet had been and continues to be international even when thinking about one country.

**III. Why was this story not known in China until 2007?**
How come this e-mail message got lost throughout those years together with the knowledge about the China-Connection project itself?

The general reasons can easily be explained. Since the Web had not yet been invented by 1987/88, qualified documentation appeared in print media. In our case the original China Connection paper was published in the German computer and communication magazine *PIK* with small international awareness and as usual the editions very soon disappeared in book shelves of libraries.

The special reasons, why that e-mail message wasn't anymore available in China, can be derived from two facts. The first fact can be found in Chapter 9 - entitled "China's .CN: Reaching Every Corner of the World" - of the book *Addressing the World: National Identity and Internet Country*

*Code Domains* edited by Erica Schlesinger Wass (SWE2003). Chapter 9 begins, "One of the first e-mails sent from China was titled *'Crossing the Great Wall to Join the World'"*, which complies with the meaning of the real title *"Across the Great Wall we can reach every corner in the world"* but differs in wording. This is typical for oral transmission over some time, whereas the title of Chapter 9 is identical to half of the original text.

The second fact: the local recipients of the mail (Fig. 1) can be derived from the e-mail addresses Wang@ze1 and RZLI@ze1 in the CC:, whose owners were Prof. Wang Yuen Fung, head of the project from the Chinese side, and Dr. C.C. Li, ICA computing center director, with "ze1" as the name for the central mail relay computer in China, a Siemens BS2000. It was on this computer that Michael Finken, a computer science student at that time implemented the Karlsruhe CSNET PMDF protocol which made the whole e-mail link possible.

Perhaps the original e-mail message was on this computer. But in the wake of the transition to domain addressing in 1990/1991, which followed the registration of the top level domain .CN, the Siemens BS2000 was replaced as central e-mail relay by a DEC Vax. That was in January 1991 and the Siemens computer lost importance as e-mail host. The .CN registration was initiated by Prof. Wang in October 1990. It was accomplished by Prof. Zorn on November 28 and confirmed on December 2 by the DDN-NIC - the Network Information Center of the US Defence Data Network and at that time the central Internet registry. This can be considered as the official **administrative** entry of China into the Internet. The full **operational** Internet services came then in 1994.

According to Prof. Wang's suggestion, Qian Tian Bai was nominated as administrative liaison (today called "admin-c" for administrative contact) for the .CN domain. This is - from the Internet point of view - the highest possible position within a network with the full responsibility for the appropriate domain, in this case the Internet domain of China.

At that time, the number of networks and accordingly the number of sub-domains to be registered in China was small, so that Qian Tian Bai, affiliated at ICA - the Institute for Computer Application under the Ministry of Machinery, could smoothly grow into this position, gaining experience and the recognition from the great universities Tsinghua and Beida as well as from the Chinese Academy of Sciences with their own network projects [QTBZW1999].

The support from Karlsruhe consisted in running the primary domain server for the .CN-domain, because the Internet link to China was still X.25-based and so far not usable for DNS-communication within e-mail services. The handover of the primary domain name server for .CN happened shortly after Apr. 20, 1994, when the direct Internet link between China and USA became operational.

All that time there was no interest in and no questions about the "Across the Great Wall …" e-mail from September 1987, even not on the 5th anniversary conference on April 20, 1999 in Beijing, where the 1987 e-mail message was shown in a presentation by Werner Zorn. [ZW1999].


**IV. Discovery of the 1987 mail and the circumstances**

The discussion came up and the Interest raised, as the China Internet Network Information Center *(*CNNIC*)* began to publish its historical Internet Time Line, where Qian Tian Bai was noted as sender of the "Across the Great Wall…" e-mail message in Sept. 1987, which had been impossible, as Qian Tian Bai was at that time on a longer stay in USA and not even member of the Chinese project team.

Since the "Across the Great Wall…" e-mail, where all the names of both teams were listed, was untraceable, there was no evidence. Prof. Wang wasn't alive anymore neither was Qian Tian Bai who died a year later in 1998, and the e-mail boxes from the Siemens BS2000 computer didn't exist anymore. As the names of the team members were unknown, one couldn't ask, even not Dr. C.C. Li, who lived after his retirement still in Beijing.

In 2005, some old e-mail messages at ICA from 1986 to 1989 (between Sept. 1, 1986 and Sept. 20, 1987 sent by remote login over X.25 in Karlsruhe) which had been carefully archived by Ruan Ren Cheng, member of the ICA Team in 1987 (see Fig. 1) turned up. But the files Ruan Ren Cheng gave Jay Hauben did not contain the "Across the Great Wall …" message. Is this one of the unimportant details, the above mentioned reader thinks should be neglected?

It was Jay Hauben, who did that diligent IT- archaeological research in 2004 – 2007 (see. References [HJ2005] to [HJ2010].

Ann-Marie Plubell began her involvement in the second half of 2002. She was asked as CNNIC foreign senior consultant to track China's first e-mail message. The task was difficult because at the time CNNIC did not have a copy of the e-mail message to give her.

After receiving this task, Ann-Marie Plubell made international contacts and long distance contacts to Chinese authorities and experts. She was able to get information about this e-mail message related to Germany, with the help from an IT department in California. She says that was the turning point. From over 10 thousand data research and information, Ann-Marie Plubell found out the e-mail message was sent to the Karlsruhe University in Germany. She went to Karlsruhe University immediately.

In Potsdam, Ann-Marie Plubell met Professor Zorn who helped make the first connection. To her surprise, after so many years, Professor Zorn still kept that e-mail in his computer, it's amazing.

After a simple search, the e-mail message put away for a dozen years was shown. The content is "Across the Great Wall we can reach every corner in the world" with Sent Time from Beijing 20:55, September 20, 1987.

Ann-Marie Plubell received a printed out copy and brought it to China. She gave a copy to CNNIC to archive. The copy is still in good shape. Wang Enhai, Director of the Information Service Department at CNNIC showed it on Sina's Science & Tech Channel, and thanked Ann Marie for her many years' efforts.

A few years ago, Ann-Marie Plubell met Professor Li Cheng Chiung in Beijing, both of them felt moved to see China's first email returned and remaining complete after many years.

**V. How the "Across the Great Wall…" e-mail brought people together**
The e-mail message sent on Sept. 20, 1987 reached Larry Landweber, Dave Farber and Dennis Jennings. Without any knowledge in China, Larry Landweber together with Richard Mandelbaum and Ira Fuchs launched an appeal to the US NSF, at that time the highest authority for international networking in the science area. Their efforts led to the approval of the e-mail connection to China signed by Stephen Wolff on Nov. 8, 1987. The letter of approval was handed over during the IANW (Landweber's yearly International Academic Networkshop) in Princeton on Nov. 9 to ICA director Yang Chu-Quan, Qian Tian Bai and Li Shao-Hong, all from ICA – the Institute for Computer Application of the Ministry of Machinery and the Technical University Beijing, to which Prof. Wang was affiliated.

The IANW '87 in Princeton can be considered as the **official entry** of China into the emerging Internet from the CSNET side. Personal connections to China by two European network authorities were set up on March 28-30, 1988, when Dennis Jennings, head of the EARN, the IBM sponsored European Academic Research Network and Daniel Karrenberg , technical staff at RIPE Amsterdam, the European IP and e-mail-Address registry, were invited to participate in the CANET inauguration conference on March, 28-30, 1988 in Beijing (Fig. 2).



Fig. 2: participants of CANET Inauguration on April 28 - 30, 1988 with Dennis Jennings (6th from left), Daniel Karrenberg (4th from left) and Werner Zorn (6th from right) as foreign experts[CA1988]

How was it possible that within only 6 month from Sept. 20, 1987, CANET with institutions and with people from provinces all over China could be brought together? The clue is very simple. CANET grew out of CASCO (China Applicants of Siemens Computers), which was founded in 1983 in Beijing as sister organisation of WASCO, the corresponding German Siemens user organization. This again goes back to the World Bank project in 1982, out of which 18 Chinese universities and the ICA were equipped with Siemens BS2000 computers, being initiated by Prof. Wang. He had studied during WW II in Germany and wanted to re-establish the technical and scientific links between China and Germany. Also, since the Karlsruhe CSNET implementation was on the ICA Siemens BS2000, the software could be easily distributed and installed on the other Siemens BS2000 computers in China.

Throughout the following seven years these personal ties where strengthened by participation in the IANW '88 in Jerusalem (Oct 26 - 28, 1988), the IANW '89 in Sydney (Nov. 28 - 30, 1989) mostly by Prof. Wang Yuen Fung and Dr. Li Cheng Chiung. From 1991, when Landweber's IANW joined the TCP/IP – promoters around Vinton Cerf and Robert Kahn, Qian Tian Bai as "admin- c" for the Internet Top Level Domain .CN became more and more important, representing China in the INET '91 Conferences in Copenhagen Denmark (June 17 - 20, 1991) and the INET '92 in Kobe Japan (June 15 - 18, 1992).

Even though the Karlsruhe ISP named XLINK (eXtended Local Informatics Network Karlsruhe) was outsourced from the University of Karlsruhe on Oct. 31,1993, the China connection including the Primary Domain Service for .CN was maintained until April 20, 1994, the day when the direct Internet-link to USA become operational. This was the day, when Madame Hu Qiheng entered the international Internet stage as vice-president of CAS - the Chinese Academy of Sciences and future president of the Chinese Internet Society.

At that time the Internet in China was purely based on e-mail services and comprised four notable networks, the CSNET-based CANET-Chinese Academic Network, TUNET-the campus network of Tsinghua university, IHEP – the network of the Institute for High Energy Physics and the X.400 based CRN- Chinese Research Network CRN, mainly using CHINAPAC, the public X.25 packet service of the Chinese Telecom [QZ1999].

Under the leadership of Hu Qiheng, the Internet in China made The Great Leap Forward and developed with breathless speed from its modest root networks to what is today, the largest national Internet infrastructure in the world with more than 600 Million users by the end of 2013.

It was 11 years later and only by chance that Madame Hu Qiheng and Werner Zorn met personally. This happened November 14, 2005 in Tunis within a preconference at WSIS (World Summit on the Information Society), where Hu Qiheng attended Werner Zorn's presentation, "German-Chinese Collaboration in the 1st Stage of Open Networking" within a parallel session, chaired by Ronda Hauben [ZW2005]. At that time the lost "Across the Great Wall…" e-mail message had already been found, but the story behind it had just been published by Jay Hauben [HJ2005] and was therefore not yet noticed everywhere. That personal contact in Tunis initiated subsequently a diligent proof of evidences by CNNIC and pushed Werner Zorn to have translations made of his German 1988 paper, first into English [ZW2007] followed soon by a Chinese version.

**VI. Panel discussion on Sept. 19, 2007 at HPI-Hasso Plattner Institute, Potsdam**
There was an award ceremony on Sept.18, 2007 at HPI- the Hasso Plattner Institute in Potsdam as "Selected Landmark" for its contribution to the "Germany and China - an Innovative Partnership in Information Technology". The 2007-competiton, "Germany – Country of Ideas",  provided the platform to bring the protagonists of the early Chinese Internet together, not only to celebrate the 20th anniversary of the "Across the Great Wall we can reach every corner in the world" e–mail message but also to exchange personal memories from those days and years. This happened in the panel discussion on Sept. 19, 2007. The following excerpts are taken from a transcript [HJ2007]) that Jay Hauben made from the TV recording of the panel on Tele-task.

Fig. 3: (from left to right): Stephen Wolff, Werner Zorn, Madame Hu Qiheng, Dennis Jennings, Larry Landweber, Jay Hauben, Daniel Karrenberg , Panel Discussion at HPI on Sept. 19, 2007
Photo: Kay Herschelmann, Berlin

**Jennings**: First of all, my apologies. I speak neither German nor Chinese. So I will speak in English and I'll do my best to be understood.

It occurs to me, that as I look around and as I talk to people young and indeed old that now use the Internet, that most people just simply assume the Internet is there. It works. All the things that we use, that they use day to day have always been there as far as they are concerned. And they have no conception of the background or the history or the struggles that went into creating this thing called the Internet. That's the first question I would like to put to each member of the panel. What now seems so simple and so obvious, Larry, was it always like this or were there, was it different? What are the war stories behind the story?

**Landweber**: Some of the conflicts? If we go back to the 1980s, the early 1980s, there was a research project that DARPA supported that developed TCP/IP. But there was no Internet. And in the early 1980s, the US Defense Department and the National Science Foundation were interested in building the Internet. On the other hand, there was an international standards effort called OSI for Open Systems Interconnection and officially every government in the world except perhaps Finland, Finland may have been the major exception, supported the OSI effort. Hundreds of millions, perhaps billions of dollars were spent on the development of a protocol suite that would become international standards. In most countries of the world, their national science foundations would not put money into internet development, including in Germany and also the United States except for the Defense Department, NSF and maybe the Department of Energy. There was very little support for the Internet. Companies like IBM and Digital Equipment were actively not supportive of the Internet. So in fact there was a major struggle to support Internet development and the building of testbeds.

Should I keep going for a few minutes?

**Jennings**: Yes, please.

**Landweber**: So here we are in the 1980s and the Internet is really a stepchild and not very far along. Well, myself, Dave Farber, a couple of others proposed CSNET and CSNET was funded by the National Science Foundation. Soon after, I went to Bob Kahn who was the DARPA person (of Cerf and Kahn, the TCP/IP protocol). And Bob gave us permission to set up international gateways so that e-mail and other connections from other parts of the world would allow data to flow into the US networks including the ARPANET and other Internet connected networks. One of the very first connections we made was to Germany (I have early e-mail, I never throw anything out). An e-mail from 1983, I think this was the first e-mail I got from you {Werner Zorn}, asked about a connection to Germany from CSNET. We approved the gateway and implemented it. There were problems. Werner has talked about the technical problems. Everything was flaky. The software we had for supporting Internet protocols was not robust. The network connections were not robust. Later, to connect to China, he had to tie together a satellite link and X.25 links and use PMDF, the CSNET mail relay software. So it was not trivial technically.

But I guess as hard, maybe harder were the political problems. So, in the United States, Steve gave us permission to have the gateway [to China]. What has not been mentioned was that the next day he told us permission was revoked.

**Jennings**: Larry let Steve. Steve, why don't you pick that up?

**Wolff**: No, no, I think Larry tells it very well.

**Jennings**: Tell us what you know.

**Landweber**: Do you want to?

**Wolff**: Please, you go ahead.

**Landweber**: So, anyway, he told us and in fact it was the White House that had intervened and told Steve that permission was not to be given. And Steve had this wonderful philosophy which helped make the NSFNET so successful. Which was, you don't ask permission in advance. You ask forgiveness afterwards. And so I think he maybe winked at us and we also decided well it's just the White House and we're academics and we can ignore them. So we did not turn off the connection to China and I think that this decision was very important.
…

**Jennings:** Jay, as a historian what lessons do you draw from this early history of the 80s?

**Hauben**: I think the lesson to draw is to realize that first there was a vision, a deep vision, from JCR Licklider and the people in the 60's. That vision was of the Intergalactic network. Somehow, by connecting a few, you were eventually going to connect everybody. But it's also true if anything good ever happened it is because some good people worked very hard over a very long period of time to overcome the obstacles. I think we know something real happened because it was so hard to get there. I think each of these stories contributes to the fact that despite the obstacles people have an understanding that what they are doing is sufficiently valuable and important that they will continue trying to do it. The job for the historian to gather up these pieces which are not very well documented and put them together to show the grand flow that has come forward.

The surprising thing was that when Werner told me the China e-mail story, it was a good story but is it exactly accurate? So I looked on the Internet and in books. I found that there was a totally different story being told that didn't have an international component. For whatever reason, the main essence of the first e-mail China story, which was that all of this activity was international, was missing in the telling of it. To clear that up it required digging. When I dug I found Werner was telling it straight.

I think the value of what we are doing here is we are hearing from some of the pioneers. So we are getting the clues of how to get the history right. It is very important that the stories be known and be told and be gathered up. So I hope there will be more panels like this one.

**Jennings**: Excellent. Larry, tell us a little bit about the Landweber Networkshops because those networkshops were key.

**Landweber**: In 1982, I went to a meeting in London that Peter Kirstein organized. I had switched to networking in the late 1970s and proposed CSNET in1979. It was incredibly exciting and by coincidence I started being in contact with people around the world who were thinking about national networks, sometimes the Internet, sometimes like EUNET, and sometimes EARN, BITNET. But there was no easy way for people to communicate. So I tried to identify one or two network pioneers in each country. As we went along the number of countries expanded. We brought them together once a year in a nice place and spent several days exchanging ideas, exchanging software, and talking about national network plans. It was a way of supporting the continuing development of the network. Daniel was at a couple of these, as was Dennis. I met Dennis in 1984 in Paris. Werner

was also there. And so gradually, first it was people from North America and Europe. Then there were some people from Latin America and Asia, Kilnam Chon from Korea, Jun Murai from Japan, Florencio Utreras from Chile, etc., . And gradually we expanded and built a community that was very important for sharing ideas. Might I add one more thing?

**Jennings:** Please.

**Landweber**: OK. For me all of this has a real important geopolitical, economic, global lesson. It is that governments have no role in deciding which technologies are superior to other technologies. That's the lesson. In the case of the OSI activity, governments around the world spent billions of dollars in an effort to build a technology that was poorly conceived and not well executed in planning it. They very actively objected to and worked against the Internet.

If you go back to 1980, US industry, European industry, Japanese industry were on an equal par when it came to telecommunications. Governments around the world by suppressing the creativity of their industry relating to the Internet made it possible for the major companies in the Internet field to initially develop in the United States. I think that this significantly hurt their economies. I hope that this will be written down sometime by historians as a lesson. There is a wonderful paper by François Fluckiger from CERN which discusses this. It's about 10 years old,

**Jennings:** Fifteen

**Landweber**: fifteen years old which actually talks about the European experience. That's the lesson, the global lesson that I have from this.

**Jennings:** Steve, what do you, pick that up. Governments shouldn't mandate technology? Isn't that what we did in the NSF? Didn't we, didn't I go around and particularly say it has to be TCP/IP?

**Landweber:** No. No.

**Wolff:** But we did that. Yes. But we were lucky**.**

**Landweber:** May I interject.

**Jennings:** You may.

**Landweber**: There was a battle. The NFSNET by accident became Internet. There was a committee and there was a battle, the physicists wanted DECNET. They wanted to have direct connections from their universities to supercomputer centers. They didn't want Internet. There were a few people, like Ken Wilson, the Nobel Prize winner who wanted the Internet. And so there really was also a battle within the US government …. You were there when that was happening.

**Jennings:** I fought that.

**Landweber:** and so it wasn't obvious that Internet was going to be the backbone of the NSFNET.

**Jennings:** But Steve

**Wolff:** No it wasn't obvious. But it was a battle that, Dennis, you fought and I fought as well because I think it was clear to us where the smart people were. It is usually a good bet to ally yourself with intelligent people and it seemed to us that the most intelligent people were those who were explaining why TCP/IP were good protocols and what the difficulties were with DECNET and

the other various protocols which were being touted at the time. But I wanted to say something to Jay. I am trying to remember the source of a quote which I think is relevant to your activities. It's from a German author and I do not know the German but the English translation goes something like this: Those things and deeds which are not written down are condemned to oblivion and given over to a sepulcher of darkness.

Larry, I am very grateful to you for not having thrown anything away because the original source material is all that we have to reconstruct the actual history
…
**Zorn:** I have a question. May I put a question?

**Jennings:** Of course you may put a question.

**Zorn**: For me the approval by the NSF was one of the important things for us to maintain the e-mail service to China. I am sure in China that approval was very little known. There were many other attempts to draw lines and links to CERN and elsewhere. Other groups tried their best to get a connection to some situation they worked with. What would have happened in the whole interconnected networks with BITNET and everything around if the NSF would have said no?

**Landweber:** To the China link?

**Zorn:** To China. Politically "no." Like you say, no nothing to North Korea, nothing to …. Was it policy to control every network with every exit and whatever in China? Without permission might, it would be thrown away and the links would be cut or what?

**Jennings:** Let me address the question and see if people agree with me. I think what would have happened, it would have been done anyway. Following Steve's maxim, Yes it was nice to ask for permission and yes it was very nice to get the permission. But I think back then we would have done it anyway and then asked for forgiveness. And I think we would have gotten away with it.

**Wolff:** Do you suppose I didn't think that? {Laughter}

**Jennings:** Maybe we recognized it was going to happen anyway.

**Hauben:** I don't know if anyone would have paid attention. Who down the line would have actually said, "I am not going to pass on the e-mail message that's come. I am not going to relay these e-mail messages any more." I don't know which human being in the chain who had invested so much of his or her time and energy and spirit would have said, "OK, I'll be the one who doesn't continue it."

**Landweber:** If there were not even the hint of the permission and if, remember we were depending on the Defense Department.

**Jennings:** Yes

**Landweber**: Bob Kahn had I think a very similar world view to Steve which was things happen and he was hoping the network would grow. But if his bosses had learned of it, the people who are the real military people, they could have made us stop.

**Jennings:** They were scary people back then.

**Landweber**: There were plenty of people and there were countries where we would not have attempted. We would not have attempted a link to North Korea for example in those days.

**Jennings:** Steve.

**Wolff:** One of the consequences might have been that it would have taken longer for what happened in 1994 because the precedent set by getting permission from the United States government for an interconnection. I think and only Madame Hu can speak to this but I imagine it set the stage for certain things to happen within China so that later when the formal, basically the IP connection was sought that was a very formal ceremony and it was an actual agreement between governments. And I think that might have taken longer to happen if the stage had not been set by the first connection.

**Jennings**: So Madame Hu, have you got some comments on the battles these people fought to get the Internet going?

**Hu:** The description of the early days when the Internet entered China may differentiate depending on the different events the different individuals had been experiencing at that time but the main stream is quite clear that the scientific research and international exchange played the role of the engine. Also we should not leave out the High Energy Physics Institute of CAS, with their partner, the SLAC in Stanford University. The earlier digital communication between the latter partners took place even for 1 year ahead of the first e-mail sent by Wang Yuen Fung and Werner Zorn and their teams to Germany, via an X.25 telecommunication link.

Looking back to 1994, at that time my feeling was the obstacles were not in the technology. Because the key person of our technology team, Professor Qian Hualin and others told me that they had full success in the test with Sprint. There were no technical obstacles. Everything is ready. Just the gate is still closed somehow. So I remember very clearly when I came to Dr. Neal Lane, the NSF Director at that time, to ask for help. That was in the early April, when I was in Washington DC as a member of the China delegation attending the US-China Combined Committee Meeting on the collaboration in Science and Technology between the 2 countries. Dr. Neal Lane immediately made a chance for me to talk with Steven Wolff. Steven just told me, "Don't worry. No problem. You will be connected to the Internet." I was not very sure about that. I asked him, is it that simple? He said yes it is simple. No contract, no sign, no document, the only document we had provided before that was the AUP (Accepted Use Policy). And then after a few days, I got the news from my colleagues in China that the connection is done, it goes through smoothly. Everything is OK. Then I thought, "Oh, Steve Wolff is really great!" This man had a magic stick. The magic stick pointed and the gate opened. Is it that simple? I guess it is.

**Jennings:** On what better note to end.

With all the hard work and all the battles, at the end of the day it took a little magic to make this fit together and to forge the links to China to enable the first e-mail twenty years ago from China to the rest of the world**.**

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