ICOHTEC NEWSLETTER

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Newsletter of the International Committee for the History of Technology ICOHTEC

Editor: Stefan Poser, Helmut-Schmidt-University Hamburg, Modern Social, Economic and Technological History, Holstenhofweg 85, D-22043 Hamburg, Germany, poser@hsu-hh.de

Editorial

Dear Colleagues and Friends,

ICOHTEC prepares an application for a research grant to HERA's *(Humanities in the European Research Area)* programme with the theme "Uses of the Past". Contributions are welcome; the deadline for proposals of subprojects is **26 March 2015**.

The International Union of the History and Philosophy of Science and Technology, Division of History of Science and Technology (IUHPST/DHST) invites submissions for the fourth DHST Prize for Young Scholars; the deadline is **31 August 2016**.

Thank you for your numerous paper proposals for our next symposium in Tel Aviv; the Program Committee has begun to evaluate all these proposals. ICOHTEC Members are invited to elect ICOHTEC's officers; the last day of the voting period is **17 March 2015**.

Best wishes
Stefan Poser

Contents

I. ICOHTEC and DHST

I.1 CALL FOR SUBPROJECTS TO ICOHTEC'S HERA APPLICATION

ICOHTEC'S Summer School Committee is preparing an application for a research grant to HERA's *(Humanities in the European Research Area)* programme with the theme "Uses of the Past". The funding would be awarded to a Collaborative Research Project (CRP), which consists of research teams affiliated to universities or research institutes. These affiliations should represent at least four European countries. The founding term stretches from June 2016 to June 2019. The application process is composed of two phases. The deadline of the preliminary phase is 9 April 2015. Those CRP applicants who pass this phase are allowed to submit a larger and more detailed application in the second phase. Further information is available in the link: http://heranet.info/hera-jrp-documents-1

The topic of our CRP is ***Learning by Experience: Accumulation of Expertise as a Driving Force of Technological Development.*** Our intention is to combine humanistic, social science and technological approach in our project bid, which is described in the following two appendices.

Our idea is to combine a research project and a set of summer schools and get HERA's grant for funding both. In order to work out an acceptable application, we need proposals on subprojects working under the supervision of Principal Investigators (PI) within the framework of the CRP, the umbrella project. Therefore we ask proposals on subprojects including the name, contact information and short CV of the contact person (PI), the title of subproject and short abstract (about 1500 characters) of the subproject's idea, objectives, sources and relevance to the theme "Uses of the Past" as well as to the CRP's theme "Learning by Experience" of the ICOHTEC's Summer School Committee.

The Summer School Committee welcomes initiatives, suggestions and complete proposals from ICOHTEC members, while our HERA proposal is open to all researchers located to specified HERA countries. The deadline for proposals on subprojects and their contact persons is Thursday **26 March 2015**. Please, send the proposals to Timo Myllyntaus (timmyl@utu.fi).

Herewith we provide additional information in two appendices:

- Outline Proposal Details
- Incomplete draft of the Research Plan

Best wishes,

Timo Myllyntaus

Appendix 1.

An Application to the HERA Programme on the Theme "Uses of the Past"

Project Leader: Professor Braun, Hans-Joachim; Male, Helmut Schmidt University, Dept. of Modern Social, Economic and Technological History, Holstenhofweg 85, 22039 Hamburg, Germany, History Department, Tel. +49 - 40 / 6541 - 3533, [hjbraun@hsu-hh.de]

Principal Investigators: TBA

Non-academic Associated Partner: Principal Curator of Technology, Staubermann, Klaus; Male, National Museums Scotland, Edinburgh, UK, Tel. +44-131-247-4357 [K.Staubermann@nms.ac.uk]

Outline Proposal Details

- **Title:** ***Learning by Experience: Accumulation of Expertise as a Driving Force of Technological Development***
- **Acronym**: ***LEAREX***
- **Keywords**: *Learning by Doing; Lessons of the Past; Human Capital; Life-long Learning; Labour Productivity; Skills of Ageing Workforce; Accumulation of Expertise; Technological Development*

- **Abstract**

A human feature is to collect continuously knowledge and experience from everything we see, do or get involved in. We benefit from this collected information in our later life. As a result, we tend to construct our present and future on past experiences. This research project focuses to examine the improvements of performance in people's work, daily activities and hobbies.

People tend to analyze the "lessons of the past" and use these lessons, whether they are derived from their personal or some others' experiences, in their actions. The past is always present in our activities. We deliberately aim to avoid past mistakes and inefficient practices in order perform our activities in better ways than earlier.

The significance of researching learning by doing assists in finding opportunities to develop the accumulation and utilization of expertise, improve labour productivity, solve bottlenecks in the management and organization at workplaces, transport, services etc. Studying learning by doing may also help understanding strengths and potentials of an ageing workforce. This may open possibilities to induce people to work longer, benefit from a larger national workforce and lower expenses of pensions.

The main aim is to improve our understanding of learning processes of individuals, groups and working communities and prepare recommendations on the basis of research results. In addition, we will attempt finding methods to translate "tacit knowledge" into perceived and communicated knowledge as well as promote learning by doing and transferring experiences from one generation to another.

Activities of the project include case studies, the project's workshops, organizing sessions in international conferences, holding two Summer Schools (2017-18) to post-graduates, the preparation of publications and the participation of HERA's meetings.

Duration: *36 months from June 2016 to June 2019*
The **total *requested* budget** per CRP and per partner country: *TBA*

Appendix 2
Research Plan for ICOHTEC's Proposal

Learning by Experience

Accumulation of Expertise as a Driving Force of Technological Development

Historiographical Background

In 1959, the US economist and political theorist Walt Whitman Rostow (1916 – 2003) published the first version of his structuralist development theory *The Stages of Economic Growth.*[1] He claimed that economies develop through five stages from primitive society to the age of high mass consumption. The decisive stage in this sequence was "*Take off*" when urbanization increases, industrialization proceeds and technological breakthrough occurs. This step depends on three components, of which *"The rate of productive investment should rise from approximately 5% to over 10% of national income or net national product"* is the most important. Rostow's theory provided one of the major historical models of economic growth for almost two decades in the middle of the Cold War period. The importance of productive capital investments to both industry and agriculture

[1] W.W. Rostow, The Stages of Economic Growth, *Economic History Review* 1959. The second version was a book titled *The Stages of Economic Growth: A Non-communist Manifesto*, Cambridge University Press 1960.

became a mantra among economists, industrialists and politicians. It was claimed that the best way to promote economic growth is to make capital investments in the production of raw materials and goods.

Although many disciplines and dozens of universities around the world introduced Rostow's small book as their textbook, several contemporary scholars openly criticized his theory.[2] For example, the Swedish economist Erik Filip Lundgren (1907 – 1987) challenged Rostow's viewpoints in his book in Swedish *Produktivitet och räntabilitet* (Productivity and Rate of Return, 1961) where he examines the importance of capital formation for economic development. He claimed that in certain industries, production per worker could increase because of "pure productivity". In his studies, he had found out that in the small metalworks of Horndal in Central Sweden, productivity on average rose by 2 percent per year between 1935 and 1950 although capital investments were omitted.[3]

> "During a period of fifteen years beginning in the mid-1930s one of the steel works (Horndal) of the Fagersta concern was neglected. No new investments were made except for a minimum of repairs and broken equipment replacement (without modernization). In spite of this, there was an annual increase in man-hour production of two percent during this period. This compares to a production growth per man-hour of four percent for the whole concern. In other plants of the company significant new investments were made during this time."[4]

As a result, this kind of increase in labour productivity was labeled the *Horndal effect* and has since been examined in the economics profession under the term *learning by doing*. During its time, Lundberg's findings raised a lot of discussion. A year later, the American economist and a key figure in post WWII neo-classical economic theory, Kenneth Arrow argued that the sustained productivity growth at Horndal could "only be imputed to learning from experience".[5] A decade later, the US economist of scientific development and technological change Paul Allen David published his analysis on a comparable phenomenon in a cotton mill in Lowell, Massachusetts, the USA, during the period 1835 – 1856.[6] There although no investment were made in new machines, an average compound rate of labour productivity at this Mill no 2 rose nearly 2 per cent annually for twelve years. According to David, his case study of this Lowell mill "probably represents the earliest well documented instance of short-run learning effects [making] its story the true precursor to the Swedish steel mill built at Horndal a century later." The author supposes that the productivity increase was attributed to "learning by experience".

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[2] For example, Paul Baran and Eric J. Hobsbawm, "The Stages of Economic Growth". *Kyklos* 14 (2): 234–242.

[3] Lundberg, Erik, *Produktivitet och räntabilitet*. Stockholm: Studieförbundet Näringsliv och Samhälle, 1961.

[4] Ibid, Lundberg (1961): 130-131. Translation of the citation from Swedish by S. Herzenberg was published by William Lazonick and Thomas Brush in their article "The 'Horndal Effect' in Early U.S. Manufacturing," *Explorations in Economic History* 22, (1985): 53-54.

[5] Kenneth J. Arrow, "The Economic Implications of Learning by Doing." *Review of Economic Studies*, 29, (1962): 155-173.

[6] Paul David, "The 'Horndal Effect' in Lowell, 1834-1856." *Explorations in Economic History,* 10, (1973): 131-150; Paul David, *Technical Choice, Innovation and Economic Growth: Essays on American and British Experience in the Nineteenth Century*, Cambridge, UK: Cambridge University Press 1975.

Since the late 1970s, economists have admitted that production per man can increase without inputs to new machinery and studied more carefully what factors have been behind this kind of rise in the labour productivity, they have suggested that better results were achieved by minor adjustments to the capital equipment, the introduction of organizational change, social factors and improved management-worker relations or a switch to more experienced workers.[7]

In the 21st century, the *Horndal effect* has not been forgotten although the viewpoint has been turned toward studying the productivity of ageing workers.[8] It has been claimed that the reason why younger workers are often considered more productive than their older mates is that they tend to work on newer machinery. The original *Horndal effect* has been started to be interpreted as an indication of the persistent capability of older employees to accumulate expertise and improve their labour inputs. Therefore, for fifteen years ageing workforce of this steelworks was able to pick up better skills by doing and raise its productivity through gradual learning process. "Age brings experience and wisdom. Think what it could mean when the Edisons and Einsteins of the future, the doctors and technicians, the artists and engineers, have 20 or 30 more years to give us."[9]

This project re-evaluates the *Horndal effect's* role as a counter theory to mainstream economics and doctrines of industrial management. The Swedish theory attempts to prove that investments in a brand new machinery and recruitment of young workforce are not the only effective methods to increase production per worker but in certain industries and medium long timespans, steady growth can be achieved also by relying old machinery and ageing but experienced workforce. The key thing is to find out how widely the *Horndal effect* can be benefitted in advanced economies and whether it can seriously compete with the common current practices of the manufacturing industries. In the future, we will see whether "learning by doing" will ever be able to challenge investments in new productive machinery or the continuous introduction of young greenhorn workforce but in the tight times, such as the present recession, this type of productivity rise may enhance the competitiveness of the existing industries.

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[7] Igal Hendel and Yossi Spiegel, Small Steps for Workers, a Giant Leap for Productivity, *American Economic Journal: Applied Economics 2014, 6(1): 73–90, http://dx.doi.org/10.1257/app.6.1.73. p. 76 ;* Lazonick and Brush, (1985): 53-96; Mats Genberg, *The Horndal effect: productivity growth without capital investment at Horndalsverken between 1927 and 1952,* Ph.D. thesis, Uppsala University, 1992, http://www.econbiz.de/Record/the-horndal-effect-productivity-growth-without-capital-investment-at-horndalsverken-between-1927-and-1952-genberg-mats/10000896236

[8] Charlotta Grönqvist, *The effect of labour force ageing on productivity in Finland,* Bank of Finland Monetary Policy and Research 15 Apr 2009, BoF Online 7 / 2009, http://www.suomenpankki.fi/fi/julkaisut/selvitykset_ja_raportit/bof_online/pages/bof_onl_7_2009.aspx

[9] Fred Pearce, The Shock of the Old: Welcome to the Elderly Age, *Global Action against Aging*, April 8, 2010, http://www.globalaging.org/elderrights/world/2010/shock.htm

I.2 DHST PRIZE FOR YOUNG SCHOLARS 2017

INTERNATIONAL UNION OF THE HISTORY AND PHILOSOPHY OF SCIENCE AND TECHNOLOGY/ DIVISION OF HISTORY OF SCIENCE AND TECHNOLOGY (IUHPST/DHST)

2017 DHST PRIZE FOR YOUNG SCHOLARS

SCHEME

The International Union of the History and Philosophy of Science and Technology, Division of History of Science and Technology (IUHPST/DHST) invites submissions for the fourth DHST Prize for Young Scholars, to be presented in 2017. Initiated at the 22nd International Congress of History of Science in 2005 held in Beijing, the DHST Prize is awarded by the IUHPST/DHST every four years to up to five young historians of science and technology for outstanding doctoral dissertations, completed within last four years.

The 2017 DHST Prize does not specify distinct categories, but submissions must be on the history of science or technology in any part of the world. The Award Committee will endeavor to maintain the broadest coverage of subjects, geographical areas, chronology and civilizations (African, American, Asian, Islamic, Western and Ancient Civilisations, and others not included in the above list).

Each Prize consists of a certificate, assistance with travel and accommodation expenditures to the IUHPST/DHST Congress in Rio de Janeiro in August 2017 and a waiver of registration fee. The winner of a prize whose thesis is relative to Islamic science is also awarded the Ihsanoglu Prize given by ISAR Foundation.

AWARD COMMITTEE

The Committee is comprised of the DHST President, Vice-Presidents, Secretary General, and distinguished specialists in specific fields.

COMPETITION CALENDAR

Submission deadline: 31 August 2016
Qualification examination and preliminary selection: September 2016
Award Committee online meeting: October-November 2016
Approval by DHST Council: December 2016
Award Ceremony: August 2017.

CONDITIONS and APPLICATION

Eligibility: Applicants must have a doctoral degree in the history of science or technology awarded no earlier than July 2012.

Language: Any dissertation in a language other than English must be accompanied by a detailed summary in English of no more than 20 pages.

Application procedure: Applicants must submit online at:

http://hpdst.gr/youngscholarsprize, where they can also find additional procedural details.

I.3 ICOHTEC Elections

Dear ICOHTEC Members,

While adding the PDF version of ICON vol. 19 to the Member's Area a couple of days ago, I noticed that some of the automated notices sent to the subscribers returned to me marked as not delivered. Apparently some of the e-mail clients rejected the message suspecting spam. I am afraid that some of you, although entitled to access the Member's Area as paying member, can not get in because the necessary login details have not made it through. If that is your case, please contact me at your earliest convenience and I will send you your login and password by regular e-mail. I apologize for any inconvenience caused.

Having this opportunity to contact you, let me remind those who haven't voted yet – the online ballot is open **until March 17,** 23:59 GMT. Your personal link to the online ballot has been sent to you on 2 March 2015. Don't miss the deadline and vote for your candidates to the vacant seats in Executive Committee and Editorial Board of ICON!

Sincerely yours,

Slawomir Lotysz

Secretary General

I.4 ICOHTEC Fees

Dear Members,

Please consider an early membership renewal payment, possibly this month. This would facilitate our work and the distribution of ICONs. There are three options for payment, Bank Transfer or PayPal or Cheques. Please see details in the Renewal Form at the end of this newsletter.

Best wishes,

Yoel Bergman, Treasurer

II. Conference Announcements

23 –24 April 2015

Alltag und Veränderung – Praktiken des Bauens und Konstruierens. Zweite Jahrestagung der Gesellschaft für Bautechnikgeschichte in Zusammenarbeit mit dem Arbeitsbereich Baugeschichte und Denkmalpflege, Prof. Dr.-Ing. Tragbar an der Leopold-Franzens-Universität Innsbruck / Daily Routine and Developments in Practice of Building Construction
Leopold-Franzens-Universität Innsbruck, Austria

Please contact the organisers until 31 March 2015, if you intend to participate.
Please visit http://gesellschaft.bautechnikgeschichte.org/jahrestagung-2015/

Please contact info@bautechnikgeschichte.org

5 -7 October 2015
The Order of Things: Early Modern Cabinets of Curiosities as Places of Teaching and Learning
Leopoldina and Franckesche Stiftungen, Hale, Germany

An international conference co-hosted by the Center of Excellence "Enlightenment—Religion—Knowledge" at the Martin Luther University of Halle-Wittenberg; the Franckesche Stiftungen in Halle; and the Leopoldina—The National Academy of Sciences.

Organization: Prof. Andreas Pečar, Prof. Holger Zaunstöck, Prof. Rainer Godel.

Early modern collections could serve in many ways as places of teaching and learning. The cabinet of curiosities of the Franckesche Stiftungen, in this regard, is an especially intriguing example. Not only was the collection used in the school curriculum, but the institutionalization of "tours" of the collection, started in the 1740s, made it an elaborate forerunner of a public museum. Working outward from the example in Halle, the conference is dedicated to the didactic moment in the arrangement of cabinets of curiosities and thereby investigates a heretofore relatively neglected aspect of the early modern culture of collecting. The conference welcomes proposals regarding the broad spectrum of forms of collecting that were realized in the seventeenth and (especially) the eighteenth century, in academies, learned societies, universities, or as part of schools. At the same time, proposals regarding collections at court and private bourgeois collections are welcome, insofar as the collections were involved in a transfer of knowledge: for example, through guided tours, which were commonplace.

The following themes will be at the center of the conference:

1. Which teaching and learning functions were early modern cabinets of curiosities expected to fulfill? Who were the audiences or the users of these establishments? What practices of transferring knowledge can be ascertained involving collections? How was the presentation of objects, both in place and in text, connected with the transfer of knowledge?

2. What primary sources are available to answer these questions? Which genres are already easily accessible and part of thorough research, in the context of the history of early modern collections? What further groups of sources are necessary in order to evaluate cabinets of curiosities as places of teaching and learning? What role do the objects of collections play as sources?
3. What kinds of connections can be drawn between individual collections, between their collectors and the objects, and also between the various media components that defined a collection as a musuem-like ensemble? In this regard, how did collections contribute to the consolidation of knowledge or the building of a canon of knowledge?
4. What strategies of semanticizing were used on the objects in the context of the collections? In what order were objects identified? How much can connections be drawn between the ways of knowing that were created in displaying the objects and the pedagogical goals of using the collections as places of teaching and learning?

These questions will be discussed at the conference. Scholars who are currently researching early modern cabinets of curiosities or who have published on this subject are invited to send a proposal (approximately one page) which fits one of these four themes by 15 March 2015.

Please contact: Eva Dolezel, Landesforschungsschwerpunkt: „Aufklärung – Religion – Wissen“, Martin-Luther-Universität Halle-Wittenberg / Franckesche Stiftungen zu Halle, Dolezel@francke-halle.de

13 – 17 October 2015
IX Congreso Nacional y I Congreso Internacional Hispanoamericano de Historia de la Construcción / Ninth National and First International Spanish-American Congress on the History of Construction, organised by the Spanish Society of the History of Construction
Segovia
CFP – extended deadline **15 March 2015**

Please visit: http://www.chahc2015.net/
Please contact the organizers by chahc2015@gmail.com

13 – 14 November 2015
"Just in time" – Logistik in historischer Perspektive / "Just in time" – Logistics in a Historical Perspective. 38th Conference of the Iron Library on the History of Technology 2015
Eisenbibliothek, Schaffhausen, Switzerland
CFP – Deadline **31 March 2015**

The 38th History of Technology Conference will be held at the Klostergut Paradies in Schlatt, Switzerland on 13 and 14 November 2015. The Conference has served as an outstanding platform for

the exchange of ideas between research, teaching and industry since 1978. The speakers and the invited guests come from universities, libraries, collections and museums or contribute their business and industrial experience. The conferences are renowned for the breadth and topicality of the papers presented.

This international and interdisciplinary event is organized by the Iron Library (Eisenbibliothek), Foundation of Georg Fischer Ltd. Responsibility for the content of the conference is in the hands of Kilian T. Elsasser (Museumsfabrik Lucerne), Prof. Reinhold Reith (University of Salzburg) and Prof. Friedrich Steinle (TU Berlin), and it is they who decide on the selection of the speakers.

We kindly invite interested persons involved in research, teaching and practice to apply to present a paper.

Conference topic in 2015: "Just in time" – Logistics in an Historical Perspective

Just in time: This approach to logistics was developed by Taiichi Ohno in the 1970s and 1980s in the Japanese automotive industry and has since established itself as the standard method. But the challenge of just in time – getting a product in the right condition to the right place at the right time – is by no means a modern conundrum. If by logistics we mean generally the planning and organization of persons, goods, resources and information so that they are available within a given space and period of time, then the construction of the ancient Egyptian pyramids and the huge cathedrals of the Middle Ages must also be considered as logistical enterprises and challenges.

The Iron Library is devoting its History of Technology Conference in 2015 to the topic of logistics in an historical perspective. The topics range from the organization of large-scale commercial enterprises such as the Fuggers to logistics in the military sphere and tourism infrastructure right up to industrial logistics and processes and challenges in the modern industrial world.

Format

The papers may be delivered in German or English and should not be longer than 30 minutes (incl. the discussion time). Papers that have been prepared to scientific standards may be selected for publication in the specialized journal *Ferrum*, which is published annually by the Iron Library.

Synopsis

Interested applicants are kindly invited to submit a synopsis of their paper – no longer than two A4 pages – in German or English, along with an up-to-date resume, by 31 March 2015 to the Head of the Iron Library, lic. phil. Franziska Eggimann (franziska.eggimann@georgfischer.com).

Organizational matters

The Iron Library, Foundation of Georg Fischer Ltd, will assume speakers' travel expenses and the cost of room and board during the Conference. We expect that speakers will attend the entire Conference.

Timelines

We request you to submit your synopsis by 31 March 2015.

The selection of the speakers will be completed by the end of May 2015 at the latest.

Please contact Franziska Eggimann, Head Iron Library and Corporate Archivist Georg Fischer Ltd, franziska.eggimann@georgfischer.com

III. Recently Published Books

Thomas Zeller, University of Maryland, tzeller@umd.edu, is the guest editor of a special issue on 'Histories of Transport, Mobility and Environment' of the Journal of Transport History, Volume 35, Number 2, December 2014.

Please find the table of contents on the journal's website:
http://manchester.metapress.com/content/u61422830676/?p=e5f2d6997156429897813b8f8ac46c04&pi=0

IV. Join ICOHTEC

An ICOHTEC membership makes you a member of the scholarly network of the UNESO-based International Committee for the History of Technology, ICOHTEC.

The membership includes:

- Reduced fees for ICOHTEC's conferences
- ICOHTEC's reviewed journal ICON (published annually, ca. 200 pages)
- Electronic access to back issues of ICON (published since 1995)
- ICOHTEC's electronic Newsletter (published monthly – available via mailing list and on the homepage)

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ICOHTEC
International Committee for the History of Technology

Form for annual membership renewals / registration of new members

Annual membership includes subscription to ICOHTEC's refereed annual journal ICON, access to all back issues of ICON in electronic form via the ICOHTEC website, a monthly Newsletter, and special registration rates at the annual ICOHTEC symposium.

I wish to renew my membership / to become a new member in ICOHTEC. (Tick below the appropriate description/rate):

□ *An individual. Rate: (40 $ or 30 € or equivalent) per year*

□ *A student. Rate: (40 $ or 30 € or equivalent for two years)*

□ *An institution. Rate: (100 $ or 75 € or equivalent) per year*

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Dr. Lars Bluma Otmarstrasse 5, D-45131 Essen, Germany.

After filling the form, please scan and send by email to Dr. Yoel Bergman, ICOHTEC Treasurer at yoelb@protalix.com or, send a hardcopy by regular mail to Yoel Bergman, 20 Haatzmaut St., Herzliya 46789, Israel. Your filled form will facilitate sending ICONs and allocating access privileges.