8:30 - 9:00
Welcome and Introductory Remarks

Moderator: Joann Rowland
9:00 - 9:45
Stefan Burmeister
What Happens with the New? Some Thoughts about Bricoleurs and Things

Archaeology is an object centered mode of discourse to approach the past. Technique based approaches of innovation research therefore seem adequate for archaeology. These mainly argue out of technique immanent constraints – the logic of objects here becomes to be a decisive factor. They have been criticized that the human actor is absent. The counterdraft is based on social deterministic approaches which focus on the human actor and social factors. For archaeology this is problematic as social factors are used to explain technical developments though they are unexplained in itself. Furthermore, technique is seen as mere tool of human purpose. The exclusion of the intrinsic logic of objects obscures approaches to understanding innovation processes in general. Wolfgang Schivelbusch's history of »The Railway Journey« clearly shows that all these approaches fail to get an appropriate understanding of the dynamics of innovation processes. The adaptation of the railway is a multilayered process that has decisive effects on many areas of society. From case to case ground-breaking changes will not be identified in their causality either by technical or social deterministic approaches. The overcoming of this unproductive antagonism could be achieved by the Actor-Network-Theory (ANT). In their dissolving the strict separation of man and objects ANT facilitates a better understanding of innovation processes. The luminance of this new star on the canopy of discourse is obvious, but how far will this approach bring us? The relation of man and things is mutual, though it is still to debate how balanced this relationship is.

9:45 - 10:30
Ewa Domanska
Posthumanities - Theory and Practice

My aim is to identify the characteristics of the emerging alternative perspectives which suggest the need for a thorough rethinking of our notions of life, human nature, the relations between the human and the nonhuman, and for breaking away from the Western tradition of anthropocentrism with its reductionist concept of matter as empty, lifeless, and lacking agency. I would claim that the challenge for today's research is in proposing new theories or methods of analysis which would spring out of data and to place the research itself in the context of the emerging project of non-anthropocentric humanities, or posthumanities. Andrew Pickering called this strategy a "posthumanist displacement of our interpretative frameworks." Of course, the point is not to eliminate the human being from our studies (of the past) but to move beyond the humanistic view of the human individual as the measure of everything. If this framework of posthumanism and non-anthropocentrism is to become a referent point for our projects, then we should develop an alternative foundation for social theory (as Bruno Latour and Manuel DeLanda are trying to do). So, a big question for "future friendly" human and social sciences would be: what kind of questions justifies our production of knowledge of the past at present? Which of the cognitive categories used by us should be turned into normative categories? What categories should be established as normative? I also would like to provoke discussion about the value of a non-anthropocentric approach to our knowledge of the past. How might theoretical proposals coming from posthumanistic thinkers such as Donna Haraway, Rosi Braidotti, Bruno Latour, and Cary Wolfe influence our reflections about the past?

10:30 - 11:00
BREAK

11:00 - 11:45
Gerd Grasshoff
A Three Phase Model of Innovation

Modern studies of scientific innovation processes favor a three phase model of innovation (Grasshoff/Schwinges 2007: Innovationskultur). The features of the model will be explored and studied on the basis of a few case studies of innovation in the last century. The three phases of innovation coincide with chained research activities related to the search for declarative knowledge, its practical realization and technological production. Only when all three phases are successfully passed, we speak of an innovation as result. In the second part of my talk these models will be applied to cases of the early history of science in antiquity.

11:45 - 12:30
Hans Peter Hahn
Inertia and Innovation: Questioning Paradigms of Consumerism

A „universe of things", as defined by commodities and consumerism, is plagued by a dilemma of a dichotomizing perception. Properties of things and ways of dealing with things are not just defined by everyday actions, but also – and substantially – through media and normative discourses. Thus, the properties of innovation and, eventually, the improvement of everyday routines associated with these innovations is not so much a question of a individual's everyday experience, but is communicated for the consumer through the mass media, in particular through advertising. A more fundamental analysis of innovation in everyday life should transcend this problematic paradigm and investigate the roles of things that do not change in the context of "new things". In particular the focus should be on the question how the "things in inertia" change (or do not change) in the moment of the advent of an innovation. Following an argument of Lucy Suchman, it is not so much the "innovation as an isolated thing" that changes everyday life, but merely the shifting contexts in the interaction with those things that do not change. In the presence of an innovation, actors show a renewed interest in recontextualization of "the old". Things, people can rely on, receive another valuation; they receive new meanings and experience new ways of dealing. Therefore, inertia and innovation should not be approached as opposite properties of objects, but merely as simultaneous processes, very often conditioning each other.

12:30 - 14:00
BREAK

Moderator: Eva Rosenstock
14:00 - 14:45
Lambros Malafouris
Making Numbers out of Clay: Material Agency and Innovation

Human 'basic number sense', i.e. our ability to approximate large numerical magnitudes, and to identify small numbers of individual objects (oneness, twoness and threeness), can be considered to be an evolved biological competence, shared by pre-verbal infants and other animals. And yet, moving beyond this 'basic number sense' of concrete counting, to the possession of an abstract concept of number presuppose a mental leap which no other animal seems capable of doing. What is it, then, that drives the human mind beyond the limits of this core system of approximate numerical thinking? Many researchers would claim that it is language (the presence or absence of number words and verbal counting routines) that enabled

humans to move beyond the threshold of approximation. But, from a long-term archaeological perspective the argument from language cannot easily account for the emergence of numerical thinking in those early cultural contexts where such verbal numerical competence and counting routine did not yet exist. Trying to answer that question, this paper focuses on the example of the Neolithic Near Eastern accounting system and speculates on the possible causal role that the clay token system, seen as a novel technology, might have played in driving the Neolithic mind beyond the limits of 'approximation' and into the long-term development of 'exact' numerocity.

14:45 - 15:30
Matthias Jung and Sayuri de Zilva
Innovations that Failed to Materialize: The Example of Early and Middle Neolithic Copper Metallurgy

On the one hand there are those interpretations of innovations that consider them undirected, on the whole irrational and similar to sudden mutations. Such approaches consider innovations as changes that by and large elude explanations. On the other hand, we find interpretations of innovations that regard them as planned and deduced novelties originating from rational calculus. The latter interpretations are mostly based on practice theories that suppose the subject's capability to speak and act. They can be said to have an "intentionalistic prejudice" which is why they can only residually comprehend that which occurs beyond the intentional. For practice theories, "unanticipated consequences of purposive social action" ultimately remain disrupting boundary conditions in the act of realizing the intended. The objectively occurring is actually difficult to apprehend categorically. Thus it is symptomatic that theories trying to develop the objectively occurring in its real structuredness often resort to metaphoric circumscriptions such as the "invisible hand" (Smith) or the "cunning of reason" (Hegel). However, the adequate reconstruction of the objectively occurring is essential for an understanding of processes of innovation. A conceptual suggestion will be sketched here. An innovation that could have been possible but effectively did not take place will serve as a case study and will be discussed ex negativo: the case of copper metallurgy in the central European Early and Middle Neolithic.

15:30 - 16:00
BREAK

16:00 - 16:45
Peter Whitridge
Soapstone Vessel Technology and the Remaking of the Inuit Lifeworld

The semilunar soapstone lamp and complementary cooking pot are iconic elements of Inuit culture in the Canadian Arctic and Greenland. They replaced Western Arctic pottery versions, and may represent the assimilation of indigenous Tunit vessel technology by Inuit migrants in the east. Given the ubiquity and versatility of clay, and the antiquity of clay vessels, the rapid adoption of new varieties based on a material that was fragile, heavy, and patchily distributed is somewhat surprising. Inuit testimony suggests, however, that soapstone was a superior lamp material that minimized oil consumption. Beyond the immediate promotion of a web of trading connections to guarantee access to the material, soapstone figured in a number of secondary technological shifts. The kitchen wing characteristic of early eastern Inuit dwellings gave way to a series of alternate floor configurations that progressively drew the labour of cooking into the centre of the winter house. Oil lamps of various sizes facilitated travel and harvesting during the long annual periods of cold, darkness and snow cover, and so buttressed the travel technologies (kayaks, dog sleds, snow houses) critical to complex seasonal rounds (indeed, the snow block house is difficult to envision without efficient oil lamp technology). The replacement of wood fuel with abundant sea mammal oil undoubtedly facilitated the colonization of the wood-poor High Arctic. And significantly, soapstone lamps and pots

profoundly reorganized the winter house's sensorium, giving rise to new cooking technologies and cuisines, altering the degree and quality of interior illumination and the smell, smokiness and warmth of interior air, and introducing novel tactile qualities (the "soapiness" of soapstone) at the very heart of house life. The soapstone lamp thoroughly, and unexpectedly, reconfigured the Inuit lifeworld.

16:45 - 17:30
Constanze Von Rüden
Producing Aegeaness – An Innovation and its Impact in Middle and Late Bronze Age Syria/Northern Levant

In the second half of the 18th Century BC Yarim-Lim of Alalakh gave instructions to decorate his palace with wall paintings. But instead of following the inner-Syrian or Mesopotamian tradition of *al secco* painting on dark mud plaster, he decided in favour of a technical and iconographical innovation, habitually used in the Aegean, and furnished his palace with bright, shiny lime plaster upon which a griffin was depicted. In the following centuries similar decorations appeared in palaces and houses in Syria and beyond. The paper will be devoted to two crucial questions in regard to this phenomenon: It will analyse why this apparently exotic innovation might have been successful; and furthermore how Yarim-Lim's desire for such a change could have emerged in the local life world. And secondly it will take a closer look at the impact of the murals on the Syrian life world by inquiring on the use of originally Aegean motives in the local material culture in the following centuries; the local ascription of their meanings; and the production and perception of Aegeaness in different media of expression.

TUESDAY, 8 November 2011
Moderator: Peter Bartl
9:00 - 9:45
Jean Paul Demoule
Neolithic Innovations: Short-term and Long-term Effects

9:45 - 10:30
Annett Dittrich
Neolithization in Progress – the Advent of Domesticates in Northeastern Africa

The introduction of domesticated animals in Northeastern Africa is presently analyzed from the perspective of ecological requirements and of the production of economic surplus: (1) The ongoing desertification of the Sahara enforced highly adaptive subsistence strategies, and (2) compared with modern Eastern Africa, domestic cattle meant the provision of milk as well as of wealth. The assumption of an (unconfirmed) autochthonous cattle domestication is the basis for the interpretation that the wide-spread and fundamentally important practice of cattle herding evolved within specialized and mobile Early Holocene foraging communities independently from cultural-technological stages (Late and Epi-Palaeolithic, Mesolithic). From a different perspective the Neolithization around 5300/5000 calBCE is seen as a fundamental social change, manifest in various aspects: The existence of large burial grounds, the categorization of people into age groups such as children (through burial rites), the perception of animals and livestock (through depictions in rock art), the circulation of sought-after raw materials, as well as new representative functions of pottery (range of forms) and lithic tools (surface retouch). The diffusion of domestic animals from the Levant should therefore be interpreted as a side effect and as an expression of prestige or of an investment in the future and in complex family/clan structures. At least the species-rich sub-tropical savannah ecosystem of the Middle Nile valley and the competition with native wild species seem to render the import of the Levantine package initially an unnecessary if not risky undertaking. In this respect the foraging communities need to be studied under the premise of how their social relations promoted or even demanded new forms of ownership, presentation, and supra-regional contacts. A

dialectical approach could initialize a change of paradigms in the research of North African Holocene prehistory.

10:30 - 11:00
BREAK

11:00 - 11:45
Susan Pollock
Working Lives in an Age of Mechanical Reproduction: Uruk-Period Mesopotamia

The notion of an „age of mechanical reproduction" is well known from Walter Benjamin´s classic meditation on art and aura. Like so many discussions of historical processes and trends in a European historical and philosophical tradition, Benjamin's takes a perspective in which little attention is given to non-European cultural contexts. My contention is that some of the most profound and transformative elements of a shift to mechanical reproduction can be found in earlier historical times and other cultural contexts. I take as my case in point the Uruk period of the 4th millennium BCE in Mesopotamia. A wide array of technological changes occurred in the Uruk period. I concentrate in particular on two: the dramatic changes in sealing practices, as the long-used stamp seal gave way to cylinder seals, and the massive growth in the textile industry that went hand-in-hand with the use of wool as the fiber of choice. Both technologies exhibit crucial changes that point to the growing role of mechanical forms of reproduction and were, in turn, transformative well beyond the immediate spheres in which they occurred.

11:45 - 12:30
Svend Hansen
The Metal Revolution

Metal as a raw material has very practical advantages that were quickly recognized and soon appreciated. The dynamic and special attractiveness of metal lay in the fact that it could be melted. Every broken axe could be melted down and a new axe cast. Alternatively, a broken axe could be melted down in order to cast an object in demand, for instance, a bracelet or a chisel. Thus, united in metal were two remarkable features that were absent in other materials: reparability (that is, renewal) and convertibility. With the possibility of remelting an object and producing a new object came a new quality: namely, the material remained (almost) whole; it was not used up. Once exploited in the mine and processed, metal could be used again and again to produce new objects. It was, thus, sensible to accumulate metal to use when necessary. Metal could always be converted according to demand: pins made from swords or swords made from bracelets. All metal objects could, and usually were, reused. In a summarising sense, the enormous technical and social possibilities offered by metal represented a challenge to the hitherto way of thinking. In my contribution I want to dicuss the implications of this new material in comparison to an other revolutionary material: plastic.

12:30 - 14:00
BREAK

Moderator: Kerstin Hofmann
14:00 - 14:45
Florian Klimscha
Established Metallurgy at the Beginning of the Early Bronze Age in the Southern Levant and its Effects on Social Life

At the moment it seems that metal objects arrived first in the Southern Levant during the Ghassul-Be'er-sheva Chalcolithic (ca. 4600-3900). Apart from the substitution of objects previously made of stone only (mainly axes and maceheads), metal seems to be used for

prestigeous and cultic objects. During the transitional period between the Chalcolithic and the Early Bronze Age, the amount of metal that is produced and consumed significantly increased. I focus on the effect of metal production on the social and natural environment in the Aqaba area. The site Hujayrat al-Ghuzlan which specialised in the production of copper and shell artifacts has been excavated between 1998 and 2010. Copper Ore was crushed on large querns while the smelting and melting took place on site, thereby creating a need for fuel in a nearly tree-less desert area and causing pollution within the settlement. Most copper was cast into ingots and thus meant to be traded. Partners can be identified, for instance, in the Nile delta. I will demonstrate the interconnection of this trade with other innovations of the time and highlight the consequences an established metallurgy had on „daily life" in a 4th millenium settlement.

14:45 - 15:30
Michael Meyer
Iron and Consequences of the Introduction of its Technologies in Middle Europe

In archaeology the innovation of iron production has always been seen as a far-reaching change in the development of early societies. Since Thomsen, it marks the transition to a new prehistoric period, the Iron Age. With the intense new research in Central and Northern Europe as a starting point the paper will consider more differentiated ways in which this innovation took place and show some of its consequences. For the first time a metal could be produced from own [LOCAL?] resources - especially in the lowlands bog iron allowed a decentralized iron production. This must have changed the perception of the landscape and its potential. But as the example of smelting sites in Glienick show, people were also confronted with exhausted resources: after all the bog iron was taken, the settlements in a large region were abandoned. The specific role of the first iron smelters and smiths can be derived from graves that were built from slag or bog iron. The increase of iron production led to new rituals of deposition as well as new types of ornaments as prestigious objects. Of particular interest is the regionalization of the Iron Age communities that might have been a consequence of newly gained independence from far-flung raw material networks.

15:30 – 16:00
BREAK

16:00 -16:45
Reinhard Bernbeck
Language and Changes in Control Technologies

In this paper, I investigate the complex conditions of the spread of Aramaic as a *lingua franca* in the early first millennium BCE during the Assyrian empire. My interest lies in the slow process of changing technologies of control and authentification. Scholars think that the use of Aramaic in addition to Akkadian led to two fundamentally different documentation technologies. Traditionally, Akkadian was written in cuneiform script on clay tablets, whereas Aramaic tended to be written in a consonant-only script on parchment. There is some evidence to suggest that the increasing use of stamp seals is related to a whole technology of writing that is based on these parchments. In turn, a slow replacement of cylinder seals by stamp seals had consequences for iconography and even „ways of seeing". Concepts of the visual field changed as well. I will address the effects of an abandonment of cylinder seals on control beyond the materialities of writing, reading and seeing.

16:45 – 17:30
Sabine Reinhold
Transfer of Innovation as Spatial Communication Process

The transfer of innovations is first of all a process of communication. Such communication is reflected in the spatial distribution of new technologies or cultural practices as well as in the speed an information takes. According to the German Historian Rudolf Schlögl in pre-modern societies, actual presence and partaking in face-to-face discourses is crucial to any form of information transfer at a social level. This communication has particular places and a specific spatiality e.g. in private, official or religious buildings, in open areas or special places, involving communication infrastructure and many more. This contribution will discuss the communication processes necessary to any innovation transfer and the places, where they occur. It will follow the arguments developed by the Swedish geographer Thorsten Hägerstrand with reference to innovation transfer as a spatial process. Hägerstrands model highlights the mechanisms, by which information about new technologies are passed on. Based on a thorough empirical basis, the model likewise discuss the places and situations, where the information exchange happens. Meanwhile Hägerstrands model is developed into an effective tool for geographers, taking into account the influence of communication barriers like language, different cultures or religions, landscape aspects and many more. In an archaeological perspective, the function of places – archaeological sites – can be discussed as the locations of information transfer. Assemblies during a market, seasonal feasts or the burial of an important person could be considered as settings, where information about new technologies are communicated, its pluses and minuses discussed. Another aspect to look at innovation transfer as a spatial process ask for the intention of diffusion. Economic benefit e.g. according to Hägerstrands model stand against intended diffusion via migration, colonisation or mission. The dynamics and direction of innovation transfer are strongly influenced by the difference of local incorporation or external superimposition. Likewise, the transfer of one new technology could convey a whole serial of minor changes, technological as well as cultural. Many innovation "packages" could perhaps be better understood, when the effect of " hitchhiking" of "new" cultural practice would be especially analysed as an process interwoven with the actual transfer of a new technology.

17:30
Final Discussion