ARCHIVES OF MOTION VS. ARCHIVES IN MOTION

[Related to lecture given at symposium *Archive / Practice*, Leipzig, 10-13 December 2009]

Terminologies of the "archive"

The term "archive" splits into two meanings: the archive as a formal structure, and the archival content. Taking "dance" in a general sense as artful, artificial and even artefactual (negentropic) movements, such kinetic phenomena are subjects of archivization in the traditional sense on the one hand (institutional archives of dance). But at the same time, a dynamization of "the archive" itself takes place with time-based and data-processing media (the algorithmization / rhythmics of the digital archive). So let us distinguish between the archive *of* motion, the storage of audiovisual and textual recordings of dance, which require that the archive is immobile in itself, and the archive as a concept *in* motion. This requires to differentiate between "memory", "storage" and "archive", between "analog" and "digital" recording of movement, between performative "re-enactment" and archival record.

Time, number, movement

Dance as an art form and the question of its archivisation, at first glance, does not seem an immediate topic for media studies, since the human body is not a medium but an organism and dance is not a technology but a cultural form. But in a more general sense, techno-epistemological media studies are concerned with dynamics, with the essential processuality which is inherent to all operative media. Artful ("technical" in its original Greek sense) operations are the technological equivalent to human "performance" (such as dance).

Therefore a media analyst is sensitive to questions of movement

and their temporal order, to which the Aristotelean definition of time itself refers: time is the effect of numerical measurement of movement. Thus the "digitalisation" (as arithmetisation) of movement is always alread implied when it comes to so-called time-based arts. If time is defined like this, the essential mathematicity of dance is implicit: *touto gar estin ho chronos, arithmos kineseos kata to proteron kai hysteron.*[1] Even stand-still thus turns out to be a temporal form (the interval), as later expressed by St. Augustin in his *Confessions*.

Storage unequals archive

Let us carefully remember the function of the archive proper: the orderly documentation of conditions in the production of events like dance (administration, economical data, contexts) which is the logistical "paratext", traditionally fixed on paper or in textual electronic files.

Besides, a more embracing, nowadays almost inflationary notion of the archive has emerged, which in the present case understands the archive as part of cultural memory in a general sense (its role in society for reflections of history). But attention, the functions of an archive, the discourse of so-called collective memory and technological storage are three different regimes of keeping records from the past.

Notation of dance and kinematography

Only quite recently in the course of long-term history dance as cultural form could be dynamically registered by storage media: cinematography first, then videography, and thus became reproducable as movement.

Different from symbolical dance notation which leads to the re-generating of movement sequences always individually, audiovisual recording is cultural engineering in a specific way, being able to register artistic expression like music and dance in high temporal fidelity to the unique event, thus suspending it from history in favor of re-presentation. When we watch a video from the archive, even though we cognitively know about the historicity of the performance, our senses cannot but treat it like a present event. This is liveness by kinetics which no graphical notation can ever approximate.[2]

At that point, recording media change from passive to active archival functions, from pure storage to genuine re-play. But more

1 Aristoteles, *Physics*, book IV (219b 1-2)

2 Dietrich Schüller, Von der Bewahrung des Trägers zur Bewahrung des Inhalts, in: Medium Nr. 4 (1994), thematic issue: *Archive - Medien als Gedächtnis*, 28-32 (28)

than this, audiovisual recording leads to artistic forms *sui generis*, from reproductive *mimesis* to technologically induced *poiesis*. This technological *apriori*, in the case of dance, leads to performance which is not just recorded by the camera, but produced for the camera eye only (post-production inclusive), different from the gaze of the human spectator in the traditional auditorium or theatre, and has resulted in the sub-genre of "screendance" (*alias* "videodance", "cinedance") which edits time (artful movement) itself, free from the restrictions of physical gravity and duration.[3]

As long as scores (like in the time of the Baroque) referred to rigid form of dance governed by fixed sequences of gestures and steps, symbolical notation could indeed fix that algorithm of movement. But with the dynamisation (if not to say liberalisation) of dance since late 18th century as part of a quite revolutionary acceleration of change in society, dance required a more flexible form of notation for individual artistic expression, from sequenced patterns to individual expression varying with each new perfomance - a variety which only cinematography could finally document.

Retro-digitalisation of cinematographically or videographically documented performance art for the sake of preservation makes it more volatile than ever. Long-term preservation of such data still requires the stability (thus immobility) of an institutional frame called "the archive"; but in its technological essence, this archive gets in motion more than ever: Text files and audiovisual formats, once dissolved from physical inscription (like phonography) and informationally bodyless, need to be converted and copied to new carrier technologies again and again - in "permanent migration"[4]. This necessity, at the same time, opens new options of "reading" the records. While kinematography cuts down movement in single photograpic moments (frames), digital registration analyzes moving images down to sub-iconic elements and makes every pixel mathematically adressable. All of the sudden, moving images and the knowledge of dance can be linked on the elementary level and calculated down to the last pixel. Thus the digitalisation of dance archives, with "movement" being subject and object of such archives, has a *paradigmatic* position for the discussion and aestehtics of memory in the age of technomathematical media.

"Really" archiving movement

Let us not narrow the function of the audio-visual archives of

3 Such has been the argument in the lecture "Screen-Dance/From Stage to Film and Back" by Claudia Kappenberg (Brighton) at the International Symposium ARCHIVE/PRACTICE in Leipzig and Dresden-Hellerau, December 10th-13th, 2009

4 Andreas Kellerhals-Maeder, Archive in der schönen, neuen Welt. Auf dem Weg zu einer klärenden Position, in: Geschichte & Informatik, 12 (2001), 89-87 (91)

dance to documenting art performances and their previous production steps, but widen the horizon: creating an archive for research into the epistemological implications of artful movement such as the early biometrical and ergometric recordings of human gestures by Marey in Paris or by Gastev in Moskov. This brings us back to the ancient Greek notion of *mousiké* which encompassed sound as well as dance and other phenomena of articulation in time.

Music is artful organisation of sound in time, such as dance is the temporal organisation of forms and bodies in space. Drama always meant the revealing of structures of time streams.[5] In the age of *streaming media* such cultural performances get an additional, tecnical meaning. The protagonist in this medien theatre is a decent letter: "*t*", the symbol for the parameter of the physical time axis. After all, every performance art refers to *chronotechnologies*, understood here in the sense of the ancient Greek musicologist Aristoxenos who defined *chronoi* as the smallest units of rhythmical time (long, short, intervals). His definition referred to poetic prosody and dance especially, but counts in a more general sense as well.[6] In the age of algorithm-driven computing, such a notion can be extended to the rhythms of digital data processing.[7]

There in an intricate relation between the rhythms (time-measure) in the prosodic articulation of syllable-based Indoeuropean languages, early notation of vocal music, and dance. From this interrelation, the archaeologist of cultural articulation deduces information on the very nature of time-based movement from poetic verse: Indication of tempo, e. g., "can be drawn from the relation of music to movement. We do not know how to match notes to dance-steps"[8], but from the way a tragic or comic chorus enters the stage in a classic Greek drama, we can derive "a fair idea of the tempo. "When they are not / running but walking at a good speed, Aristophanes makes the rhythm iambic" <Ibd., 15.f>. After all, the very terminology of prosodic verse stems from dance-steps.

The subject of archivisation of movement thus extends more generally to the dynamisation of the archive. The essential operation to create an archive of moving arts like dance, of course, is recording: either symbolically (by dance notation in

5 Hans-Thies Lehmann, Postdramatisches Theater, Frankfurt/M. (Verl. d. Autoren) 1999, 61

6 Lionel Pearson, introduction to: Aristoxenus, Elementa Rhythmica. The Fragment of Book II and the Additional Evidence for Aristoxenian Rhythmic Theory, Oxford (Clarendon Press) 1990, xxxiv

7 Shintaro Miyazaki, Das Algorhythmische. Microsounds an der Schwelle zwischen Klang und Rhythmus, in: Axel Volmar (ed.), Zeitkritische Medien, Berlin (Kulturverlag Kadmos) 2009, 383-396

8 M. L. West, Ancient Greek Music, Oxford (Clarendon Press) 1994, 154

the tradition of writing / *graphé*), or by media endowed with the capacity to register the physically real audiovisual signals (media-archaeologically starting with the phonograph and with chrono-photography), thus literally engraving ("groove") - in respect to Aristotle's correlation of time-number-movement - the over-countable event. Countable movement, whcih at first sight sounds like an oxymoron, can be analyzed only by use of real numbers which can not fully be catched by symbolical notation but only take place in correspinding signal-based media. Only analog media like the phonograph allow for an archivisation of the essential of movement, i. e. its dynamics, and electromagnetic storage media like the magnetophon and video tape are especially capable to catch that *momentum* since their reproduction mechanism is irreducably dynamic itself, being a function of one and only real variable: the time axis.[9] Once dance is not only graphically, but technographically recorded, its dynamic re-play challenges the classificatory order ot the archive itself, to be replaced by probabilities which is the field of mathematical stochastics. William J. Mitchell writes in *The Reconfigured Eye*: "We must abondon the traditional conception of an art world populated by stable, endunring, finished works and replace it with one that recognizes continual mutation and proliferation of variants - much as with oral poetry."[10]

Only by means of a complete mathematical (literal) *analysis* of recordings of artful movement (in terms of real numbers) its archive can become a *dynarchive* which is reconfigurable in order to reveal new analytic insights without destroying the recorded event itself. Cumulative memory is one thing; adaptive (algorithmic) storage another.[11]

Digitization and hypertextualization

Digitalisation in its precise sense is a techno-mathematical practice of analog-to-digital conversion by sampling. Once data are digitally stored, they can be made accessible in networks such like the World Wide Web. But not only do dance archives need to go *online*; networking means as well to create epistemological connections. This implies that dance in archives is not just connected to other dance archives, but to archives of other forms of movement as well, such as the *Encyclopedia Cinematographica* at the Institute for Scientific Film in Göttingen.[12] Since 1952, this

9 See Friedrich Kittler, Die Welt des Symbolischen - eine Welt der Maschine, in: same author, Draculas Vermächtnis. Technische Schriften, Leipzig (Reclam) 1991, 58-80 (68)

10 William J. Mitchell, The Reconfigured Eye. Visual Truth in the Post-Photographic Era, MIT Press, 1992, 52

11 See Heinz von Foerster, Gedächtnis ohne Aufzeichnung, in: same author, Sicht und Einsicht. Versuche zu einer operativen Erkenntnistheorie, Braunschweig / Wiesbaden (Vieweg) 1985, 135

12 http://de.wikipedia.org/wiki/Encyclopaedia_Cinematographica;

project has generated an archival matrix of elementary 2-minute film records of whatever moves, from human (most ethnic) dance over "animal locomotion" (to take an expression of Muybridge) to movements in material metal.

Another opening link from a dance archive to archives of movements leads directly into the laboratory. Norbert Wiener, author of *Cybernetics* (1948), was one of those mathematicians for whom contact with actual phenomena in physics, engineering, or biology would sometimes play a fruitful role in protecting his mathematics from becoming empty and artificial."[13] The place where mathematics and physics actually meet is technical media, and it happens musically. Wiener preferred in his research this middle ground, and "it is in this way that the phenomenon of Brownian motion focused his mathematics" <ibid.>, and any scientific recording of such a motion looks like an avant-garde dance proper.

Re-enactment **and the archive**

When we watch audiovisual recordings from a dance archive, a disruption takes place: between the technology of recording which is measuring, belong to mathematical, physical time (Henri Bergson calls this *temps espace*), and the phenomenological experience of time (Bergson's *temps durée*).[14]

This brings us closer to the question of artistic practices of reconstruction, of re-enactments and of (self-)archivisation. For the re-exposition of historic media art, the crucial question has raisen: Does this require the original *versus* functionally equivalent technological hardware? Do the same criteria count as well for re-enacting art based on human bodies (as in the case of dance)?

There lies a world of difference between technology-based and body-based re-call of the past. The difference is between real signal recording and symbolic order: between the video recording (on magnetic tape) of a dance which can thus be identically reproduced in its "punctual" (Roland Barthes) singularity as temporal event at any later point in time, and the re-enactment of such a piece on the basis of a score in symbolic or graphical notation which demands ever new interpretation and allows for improvisation (the un-notated). In the case of Samuel Beckett's play *Krapp's Last Tape* (1958) where the human protagonist, on occasion of his birthday, listens to the tape-recorded diary spoken in previous years, the gap widens between his former and

accessed 23 November 2009

13 Steve J. Heims, John von Neumann and Norbert Wiener. From Mathematics to the Technologies of Life and Death, Cambridge, Mass. / London (The MIT Press) 1980, 68

14 See Henri Bergson, Perception du changement, Oxford 1911, and same author, Données immédiates de la conscience, Paris 1889

his present voice - different from his hand-written records in the invenotry to this tapes. The act of reading leads to cognitive neuro-calculation, while the acoustic channel performs physiological signal processing.[15]

Is there an option to catch the authentic visual of sonic gesture before the age of technical recording media, the phonograph, the Welte-Mignon recording piano, and cinematography? The historical performance practice (for dance, theatre and music) can only be reconstructed by scriptural sources, or indirectly by re-using ancient hardware (be it historical architecture, or historical music instruments).

Technical repeatability leads to almost a-historical functional re-enactment; the experience of hight-tech media time is closer to the criteria of experimentation in natural sciences than to the historicist idea of empathetic history. The technological reproduction of a sequence of sound or vision succeeds in exactly the same way as the original, even if it successively uses modern formats such as the Compact Disc instead of the previous vinyl record. This involves the media-archaeological question in its material sense: What difference lies between a functional electronic component of previous generations and its actual embodiment (such as the electronic vacuum tube and its functional replacement by the transistor)? In most cases, the performance is as good, exactly because techno-logics is basically operative and not performative - *gleichursprüngliches* re-enactment.

Sometimes technology itself becomes an "archaeologist" of visually recorded movements. The earliest known recording from a Television Transmission is the revue *Looking In*, performed by the Paramount Astoria Girls on the BBC Baird television system (30 lines) in April 1933, recorded by an enthusiastic amateur on his recording equipment (the Baird Phonovision system) on aluminium disc.[16] Processed and restored by digital filtering, the key to clarity seems to be movement itself. Any reproduction of one of the 30-line television broadcast as stills in a printing medium (photography in the book) gives a wrong impression of what had been actually seen. Here the time-critical comes in, since printed records (be it texts, be it images) miss a crucial element: time.

A single frame of the Paramopunt Astoria Girls may be crudely recognisable, but when seen as a moving dynamic television image, / the girls come to life before our eyes. <...> it has much more to do with what we perceive

15 Carl Wiemer, Im Rauschen des Realen. "La dernière bande" - Becketts medientechnologische Antwort auf Prousts *Recherche*, in: Romanistische Zeitschrift für Literaturgeschichte 25/1-2 (2001), 169-176 (173); from a different point of view: Michael Lommel, Synästhetsie der Erinnerung: Becketts *Krapp's Lat Tape*, in: Franziska Sick / Beate Ochsner (ed.), Medium und Gedächtnis. Von der Überbietung der Grenze(n), Frankfurt/M. (Peter Lang) 2004, 255-264

16 See http://www.tvdawn.com/recordng.htm = The Restored Video Recordings 1927-1935

than what is there in pixels, lines and frames. What we are experiencing is not the detail that the eye sees, but the recognition of movement that the brain sees. <...> our brain somehow builds up a model of what we are looking at.[17]

Archive, diagram and movement

From cinema studies we know that the filmic motif cannot be reduced to the iconology of the single image but turns out to be a relational web which diagramatically unfolds.[18] Any archive of temporal figures is marked by such vectors.

The most decisive real physical aspect, to which only technical media like the phonograph with its recording of actual acoustic waves can refer, is temporal processuality. With such kind of recording emerges an archive of the dynamic, itself leading to a kind of *dynarchive* in mimesis to its temporal objects. The monopoly of alphabetic writing in the storage of cultural information (in fact the traditional message of the medium archive) has been broken, leading non-grapical recording and "archival" readings of signals which have never been written.[19]

Analog media allow for the memory of non-intentional records which elapse the symbolical notation by the alphabet, thus leading to what Marcel Proust (in the age of chronophotography, phonography and kinematography) has identified as *mémoire involontaire*. The recording of dance as well is part of such an audiovisual *anarchive*. But attention once more, let us not confuse *recording* and the archive. *Records* represent the content of the archive; the archive itself, though, is rather an address structure, a logistical function, closer to *logos* than to *physis*.

Media archaeology is concerned with media not only on their structural but as well on their *operative* level, thus becoming "post-structural" or "diagrammatic" defined as the "rôle intermédiaire <...> entre le geste et le symbole".[20] A generative archive: "Le diagramme n'est pas inséré dans une machine, dans un système des règles, il est un générateur" <Mazzola ibid., 154>. This diagrammatic vector of media archives places it beyond semiotics ("loin du sémotioque", as expressed by Mazzola) and closer to signal analysis, with a signal being the physical

17 Donald F. McLean, Restoring Baird's Image, London (The Institution of Electrical Engineers) 2000, 211f

18 André Wendler / Lorenz Engell, Medienwissenschaft der Motive, in: Zeitschrift für Medienwissenschaft 1/2009, 38-49 (42), referring to: Michael Walker, Hitchcock's Motifs, Amsterdam (Amsterdam University Press) 2005, 270ff

19 John Durham Peters, Geschichte als Kommunikationsproblem, in: Zeitschrift für Medienwissenschaft 1/2009, 81-92 (86)

20 Guerino Mazzola, La Véritè du Beau dans la Musique, Paris (Delatour France) 2007, 153

representation of a temporal event.[21]

From spatial to time-based archives

From a media-archeological point of view, the traditional archive (as indicated above) gets deconstructed by the implications of digital techniques. Since antiquity and the Renaissance, mnemotechnical storage has linked memory to space. But nowadays the static residential archive as permanent storage is being replaced by dynamic temporal storage, the time-based archive as a topological place of permanent data transfer.

Are there objects which are non-archivable, like Fluxus art in its self-estimation once claimed (though it later became subject of documentation)? Or does the electronic technology of the new archive itself provide for permanend chance? The authoritative stability of the archive liquifies in the age of electronic communication; even the signature becomes digital.[22] Electronic memory is transitory and thus comes closer to the dynamic essence of dance itself.; The electronic archive transforms from a stabile data storage to a dynamic, self-organisational system of fluid data.[23] The principal storage in computers is a kind of temporary archive, a short-time memory which has been called "register". It is the essence of digital data processing that memories become more and more intermediary.

Kinetic im/mediacy: towards a dynamic technology of moving image retrieval

It is possible, in the age of hight-performance computing, to navigate through large amounts of moving images beyond verbal language; there is something like an im-mediate access to archived dance, unfiltered by words or metadata. Expressing digital pictures by numbers undermines the old dichotomy between image and meta-data; there is rather an implosion of images and numbers in digital time. The computability of images is accentuated by the late media philosopher Vilém Flusser:

The continuous sign-system image thereby becomes divisible into „discrete" units; it can be transmited and reproduced. A code is thus obtained that comprehends images.This leads one to activate the code and to create new images

21 Karl Küpfmüller, Die Systemtheorie der elektrischen Nachrichtenübertragung, Stuttgart (Hirzel) 1974, 393

22 See Jacques Derrida, Archive Fever, xxx

23 Aleida Assmann, Das Archiv und die neuen Medien des kulturellen Gedächtnisses, in: Georg Stanitzek / Wilhelm Voßkamp (ed.), Schnittstelle: Medien und kulturelle Kommunikation, Cologne (DuMont) 2001, 268-281 (280)

out of the code language.[24]

But what is an image in computable space: a set of data, a format, an „epistemological thing" (Jörg Rheinberger)? From the media-archaeological point of view, such an "image" is just a visualisation of what been translated into a two-dimensional mathematical matrix (just like the sound from a CD player is nothing but a sonification of a serial array of binary data, that is: square-shaped signals). This symbolisation in form of bits, while being an abstraction from the real world, does not mean though that the relation between the information and the physical world has become purely arbitrary. When analog signals from the physical world are being sampled (i. e. time- and value-discretely quantized), the resulting strings of bits ("words") as still quasi-indexically shaped by the original physical event which, in the case of digital visual recording of dance, is the moving bodies.

At what moment is such a set of data interpreted as a cultural image? By the agency of human perception only, by verbal description (*ekphrasis*), or independent from human awareness already? Without human interpretation of certain visual patterns, the image would just be a cluster of data. Optical signals become information „in the eye of the beholder" only, while the computer can deal with the symbolical analysis of physical data only, not with the imaginary.

What digital space allows for instead is the option of navigating images in their own medium - without changing the channel from visual to verbal language. In digital space, the task of *searching images* does not only mean searching for images, but has a second, reverse meaning as well: movement sequences can be automatically matched to similar movements, without the interception of words. This is dynamic navigation in *Dataland* (as designed in 1973 by William Donelson), not in the alphabet or in dance notation. Different from printed letters in a book, the symbols in digital dataland are arranged and distributed algorithmically - a dynamics which matches the kinetic nature of orderly movement itself.

The necessities of moving image compression set aside (the MPEG standard), little energy has been spend so far thinking on how we interface to movement in images in a non-verbal way for analytic use. Let us thus search for visual knowledge not by meta-dating images, but within the visual endo-data: entering movement immersively. In return, kinetic information generates a kind of second-order visual knowledge, cartography, diagrams - infomapping. A critique of the notion of „meta-data" draws on the assumption that there is knowledge already within the images, a kind of knowledge which either does not need to be meta-dated or

24 Harun Farocki, Reality Would Have to Begin, in: Documents 1/2 (Fall / Winter 1992), 136-146 (142), here referring to: Vilém Flusser, Für eine Philosophie der Fotographie, Göttingen (European Photography) 1984

cannot be grasped by verbal description at all. Let us call it *endo-data*. Let movement be informative itself - by means of operating with values that are, already, intrinsic to the recorded movement. We can tease out some indications of "semantic" movement once it is subjected to algorithmic data processing.

Any „digital image" is an image no more (in its emphatical sense); what looks like images, is rather a function of mathematical data sets. The media-archaeological hypothesis reads like this: There is a knowledge already implicit, „dormant" within the electronic images, a kind of compressed virtual knowledge, which - different from external inscriptions (meta-data) - waits to be un-covered from within. Digital data banks of moving images, when cleverly adressed, render a kind of knowledge to us which would otherwise be unimaginable in the Gutenberg world. That is, digital images render aspects of visual knowledge which only the *medium knows*, virtually in the „unconscious" of the data-bank. The media-archaeological program is to uncover such *virtual visual knowledge*.

Navigating moving images (literally surfing waves) is possible only by means of digital addressability. In most media archives, though, navigation through images still requires verbal or alphabetical meta-dating. In order to get a video tape, we still have to type a verbal search term. Most videotape extraction in archives of moving images is done by the grip not on the single frames (like in post-production editing tools like AVID) or even picture elements, but on the whole tape. The computerization of such media archives now promises that movemement which traditionally resisted the human attempts to describe it verbally with precision will be finally expressed dynamically (Lev Manovich) - as algorithmicised data sets, as clusters of pixels and colour values, edges, curves, traces.

Addressing and sorting non-scriptural media remains an urgent challenge which, since the arrival of fast-processing computers, can be met by digitizing analogue source material. The result is not necessarily better image quality but, rather, the unforeseenability to address not just images (by frames) but every single picture element (each pixel).

Images and sounds have become calculable and thus capable of being exposed to pattern-recognition algorithms. Such procedures will not only media-archaeologically "excavate" but as well *generate* unexpected optical statements and perspectives from an audio-visual archive that can, for the first time, organize itself not just according to meta-data but according to its proper criteria - visual memory in its own medium. Contrary to traditional semantic or iconological research in the history of ideas, such an endogenic visual archive will no longer list images and sequences according to their authors, subject, and time and space of recording. Instead, digital image data banks will allow visual sequences to be systematized according to genuinely kinetic

notions and mediatic rather than narrative common-places (*topoi*), revealing new insights into their im/material values. Our predominantly scripture-directed culture still lacks the competence of genuinely dynamic communication.

So let us dream of a tool box that would make it possible for us to communicate with kinetic memory without verbal interference, beyond the print-model of alphabetic, lexicological order. Do we have to always group image features into meaningful objects and attach semantic descriptions to scenes? Let us here compare such electronic search operations with the methods of the info-brokers of early modern science. Collectors in the 17th century imposed structure on the apparent disarray of the phenomenal world by searching for correspondence among the otherwise jumbled elements. This aesthetics was based on visual patterns rather than on verbal classification: "Their patterns are to be read as comparative contingencies or juxtapositions, as a system of potential *matches*.[25] Claire Preston identifies an early modern version of field theory and chaos theory in Montaigne´s observation that "toutes choses se tiennent par quelque similitude"[26]: Similitude binds everything together. Is it this where the Renaissance and modern computering meets? But for sophisticated forms of visual rhetoric the computer is not yet capable. A computer can hardly identify the whole of an object from the sight of a part of it. The computer is no good at spotting associations between seemingly unrelated pieces of information and derive generalizations. In order to "rock" the dance archives, we need to develop agorithms that will begin to make useful comparisons of similar but not identical movements on the basis of new protocols.[27]

Is this the hertiage of the Warburg paradigm? The art historian Aby Warburg, between the two World Wars, made an attempt at a serious memory game. He assembled an atlas of dynamic visual memory (gestures of passion) in the Occident based on photographic reproductions exclusively, combined with a large library, the famous Warburg Library of Cultural Studies in Hamburg. Warburg aimed at the visual formulas in occidental art history, a kind of sub-conscious collective cultural memory. Although this project looks primarily iconographic at first glance, its coupling with new digital image-sorting programs nowadays opens up genuinely new

25 Claire Preston, In the Wilderness of Forms: Ideas and Things in Thomas Browne´s Cabinets of Curiosity, in: Neil Rhodes / Jonathan Sawday (eds.), The Renaissance computer: knowledge technology in the first age of print, London / New York (Routledge) 2000, 170-183 (174f)

26 Michel de Montaigne, Oeuvres complètes, ed. Albert Thibudet / Maurice Rat, Paris (Gallimard) 1962, 1047; see N. Katherine Hayles, The Cosmic Web: Scientific Field Models and Literary Strategies in the Twentieth Century, Ithaca, NY (Cornell UP) 1984

27 See Duncan Davies, Diana Bathurst u. Robin Bathurst, The Telling Image. The Changing Balance between Pictures and Words in a Technological Age, Oxford (Clandendon) 1990, 64f

perspectives - a productive tension between the traditional image-content based approach and a media-archaeological approach which privileges a data-based method of ordering images where the reproductions, built from numbers, can be constantly re-arranged and re-configurated and re-calculated from within.

Beyond the archive?

The key paradox of the current archival situation remains: The 21st Century will increasingly become an epoch *beyond* the archive. For media memory, archival dynamics replaces „archival space" (Michel de Certeau). The archive means in many ways the opposite of what digital storage entails, which is the loss of selection and classification, indexing and critical revision. The new archival technical approaches still arrest the archived and depend on immobility, for instance in the case of archiving web pages. This can only be achieved through freezing the page in time, and thus losing the dynamic quality of its updates, reconstructions, etc. So let us distinguish between the archive *of* motion, the storage of films and sound recordings, which requires that the archive is immobile in itself, and an archive as a concept *in* motion.[28]

28 See W. E., Cultural Archive versus Technomathematical Storage, in: Eivind Rossaak (ed.), Archives in Motion, xxx