»God is in the Details.« or: the Filing Box Answers.

The title of this talk refers to two eminent scholars.

The first quote stems from Aby Warburg, who was born in 1866 and died in 1929, the son of the owner of a bank, who sold his status and his rights of a firstborn to his brother — like Esau did at one time. The brother is called Max and not Jakob, and the price was not a plate of lentils but every book he, Aby, wanted. The deal became dearer than Max thought when he took over the Warburg Bank and promised to buy the desired literature.

Aby Warburg became one of the first and one of the most famous Kulturwissenschaftler, scholar in the field of cultural studies, and he built the Kulturwissenschaftliche Bibliothek Warburg in Hamburg, who's stock emigrated 1933 to the Warburg Institute in London.

Warburg deserves to be called the inventor of iconology. Art history defines it as »description and classification of image content aiming to understand the significance of this content.«[1]. In a way this is the key problem of all scientific use of images.

My other patron is Niklas Luhmann, one of the greatest sons of my town Lüneburg, born 1927, died 1998, sociologist and constructor of the modern systems theory, who startet his »filing box because of the simple consideration that« his »memory was bad« already at the age of 25[2]. He communicated with his filing box, it was an eminent source of his productivity and he treated it so well that in the end it answered him, surprised him and gave back what never was put into it by him.

In other words: the concern is that of media of knowledge.

At the shoulders of these two giants stands my humble contribution, the attempt to combine the sharp eyed gaze at image details with a comfortable filing box by an implementation in software.

God is in the details — a science of the sharp eyed gaze — Thinking at images

Images have a poor scientific reputation. They count only little if exact conclusions have to be drawn. Since modern times precise thinking is done with text, because images are reigned by the category of similarity, which is, secondo Foucault, since the beginning of the 17th century »no longer the form of knowledge but rather the occasion of error, the danger to which one exposes oneself when one does not examine the obscure region of confusions.«[3]

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[1] Warburg, Aby: Nachwort des Herausgebers. In: Wuttke, Dieter (Ed.): Ausgewählte Schriften und Würdigungen. Baden-Baden, 1980, p. 601 ff. Transl. MW.

[2] Ibid., p. 33.

[3] Foucault, M. (1994) Random House, New York. The Order of Things. p. 50.

In spite of this, great thinkers also after the 17th century have thought in images. My favourite example is the one by Charles Darvin[4], who at December 7th 1856 jottet into his notebook[5] »I think«, to express what came to his mind by means of an image, with a diagram:
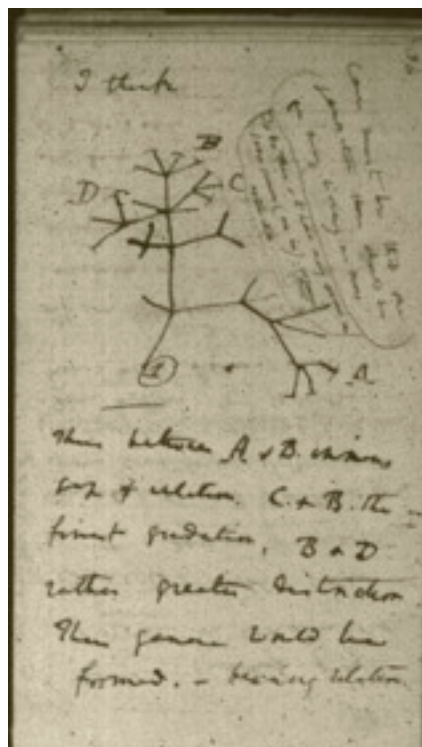
It took until now to understand why to think in images is not offensive but fruitful. The new science that emerged from that is the reason of this book: Bildwissenschaft. I refrain from translating it in english.

Gottfried Boehm wrote: »the notion ›image‹ concerns a different type of thinking that is capable to clarify the for long underestimated cognitive techniques that do not use verbal representations. […] It is an ›iconic difference‹ with which significance can be expressed without reverting to linguistic models, e. g. syntax or rhetoric figures. Because the intelligence of images lies in their respective visual order."[6]

I'd like to point to this extra-liguistic aspect of images, to the fact that images and their interrelations are not totally exhausted by speech and for that very reason could not be explained and described verbally without leaving a residuum.

I will not stop at principles but will show you very concretely the digital media with which this ›iconic difference‹ is turned into media technology.

In very much the same way as language uses words and notions to form reasonable propositions, a thinking at and in images is done using image atoms,

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[4] http://www.darwin.ie/wordpress/wp-content/uploads/2008/02/darwin.jpg

[5] http://darwin-online.org.uk/content/frameset?viewtype=side&itemID=CUL-DAR121.-&pageseq=38 from »Complete Work of Charles Darwin Online.

[6] Boehm, Gottfried: Iconic Turn. Ein Brief. In: Belting, Hans (Ed.): Bilderfragen. München: Fink Verlag, 2007, p. 27. Transl. MW.

signifying entities. Contrary to language it is all but clear which these are.[7] Language has brought about the dictionary. Image atoms have to be discovered, negociated, described every time anew.

Aby Warburg was deeply convinced that the cultural historic significance of images exactly lies in these image atoms and their interrelations. At the 25th of November 1925 he found the following word for this: »Der liebe Gott steckt im Detail.«[8] God is in the details.

With the full seriousness of scientific endevour he stated: »Wir suchen unsere Ignoranz auf und schlagen die, wo wir sie finden.«[9] We search for our ignorance and beat it where we find it.

One of his endevours I will bring back to your memory.

Warburgs methodology of cultural historic analysis of image motifs, his iconography and iconology, as we would call it nowadays, traced the path of tradition of image contents from the antiques up to now. A famous example of this technique of thorough tracing is written down in his paper about the month frescos in the Palazzo Schifanoia in Ferrara. It is a veritable riddle, which he solved with the acribic exactness of an investigator.

The question is: who is that man?

The answer is: it is a certain Perseus, who changed his appearance significantly, which, though, could not irritate the Warburgian serendipity.

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[7] Cf Warnke, Martin: Bilder und Worte. In: Ernst, Wolfgang ; Heidenreich, Stefan; Holl, Ute (Ed.): Suchbilder. Berlin: Kulturverlag Kadmos, 2003, p. 57–60.

[8] Warburg, Aby: Nachwort des Herausgebers. In: Wuttke, Dieter (Ed.): Ausgewählte Schriften und Würdigungen. Baden-Baden, 1980, p. 619.

[9] Ibd.

Here comes the chain of evidence:

The most important information comes from the context of the quested: ast-
rology. The figure is part of the month march, so image tradition of the
zodiacal sign, the Aries, helped a lot to trace down the personnel under
suspicion.

Perseus from the greek sky of fixed stars,

who holds in one hand Gorgo's head and the harp, the scimitar, in the o-
ther. He becomes the egyptian first dean of Aries, the one who rules the
first ten days, from deka, ten:

He carries an egyption double axe.

He mutates more and more to an arabic decaptivator and hangman, immediately
afte having done his duty. We recollect: he cut Gorgo's head.

A spanish lapidarium showed him that way, the double axe is still there, black skin is added:

Considering an indian tradition, that reads:

> »The indians say that in this dean a black man rises with read eyes, of big figure, strong courage und great attitude; he wears a big white costume he girdled with a rope […].«[10]

we get the ethiopian hangman, using his rope as a belt, showing this service weapon to everybody:

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[10] Boll, Franz: Sphaera. Leipzig 1903. p. 497.

Since all the relevant literature was known to the principle of the Palazzo Schifanoia, we have a complete chain of evidence. The person is convicted of being Perseus.

Aby Warburg also argued with images in his Mnemosyne-Atlas, and this is indeed utterly necessary to be able to follow the chain of reasoning in his paper. He used arrangements of images, photographs pinned to black canvasses, to relate images from distant times and places.

Wordless, image next to image, his iconology begins to blossom. Horst Bredekamp und Michael Diers stressed that the significance of images in a process of civilisation lies somewhere between magic and logos.[11] Michaud calls it »a mute language, freed from the constraints of discourse.«[12]

Here we have the Warburg library, in the foreground a row of such plates of the Mnemosyne Atlas:

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[11] Ibid., p. 9.

[12] Michaud, P.-A. Trivium 1-2008 »Zwischenreich«. par. 30.

The frames served as means and media of reasoning and of presentation. They were relativlely easy to carry about but set limits to arbitrary recombination of the contents. Warburg wrote in his scientific diary[13]:

>»The re-grouping of the photo-plates is tedious«
>»mass displacement within the photo plates.«
>»Pushing around of frames with Freund.«
>»Difficulty: the placement of Duccio«
>»The arrangement of plates in the hall causes unforeseen inner difficulties«
>»Begun to cut out all the gods«

It must have been extremely difficult to relate image details with one another, despite the fact that exactly this was of such an eminent importance to Warburg. Peter van Huisstede reports of chains of argumentation like filaments consisting of 15 or 20 images. Whether Warburg actually used a ball of woolen thread is unknown to me, but I am convinced he would have gone a similar way we did.

HyperImage: working close to the digital image

Our software is a digital filing box for image details. References between these details can be coded without verbalisation. Its name is HyperImage[14], it is a collaboration between the Humboldt University in Berlin and the Leuphana University of Lüneburg, the german ministery for research and education (bmbf) gives the money. We are in our third and last year of operation, four people work for it, I am the head of the Lüneburg part.

Images are uploaded from repositories to the editor, that is developed in Berlin. There these images are put into groups, metadata are added, image details are marked and linked to one another. With light tables arrangements of the Warburg frame type can be done, albeit a bit more comfortable. The images can be referred to in multiple contexts and interrelationships at the same time, what Warburg definitely would have liked. And because of everything being digital, image indexes and concordances are compiled automatically.

All this results in Flash based web pages, to be put in operation without further ado on any conventional server or even from a local drive.

Pilot users tested our application all the time for their own research purposes. A stable final version is online as open source software.[15]

Lets begin with the editor. It is programmed in Java, as platform independent open source software, in its architecture strictliy following the principles of web services. After authentification, images are uploaded from the local drive or any repository with a proper interface. The material is grouped, metadata are added, decomposed into image atoms, these are linked together, the whole stuff exported as an XML file.

This is how it looks like to link a region that has been marked in the editor to another marked region:

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[13] After Huisstede (1955) p. 147 ff. Trans. M. W.

[14] Key: 01DS004B.

[15] see http://www.hyperimage.eu.
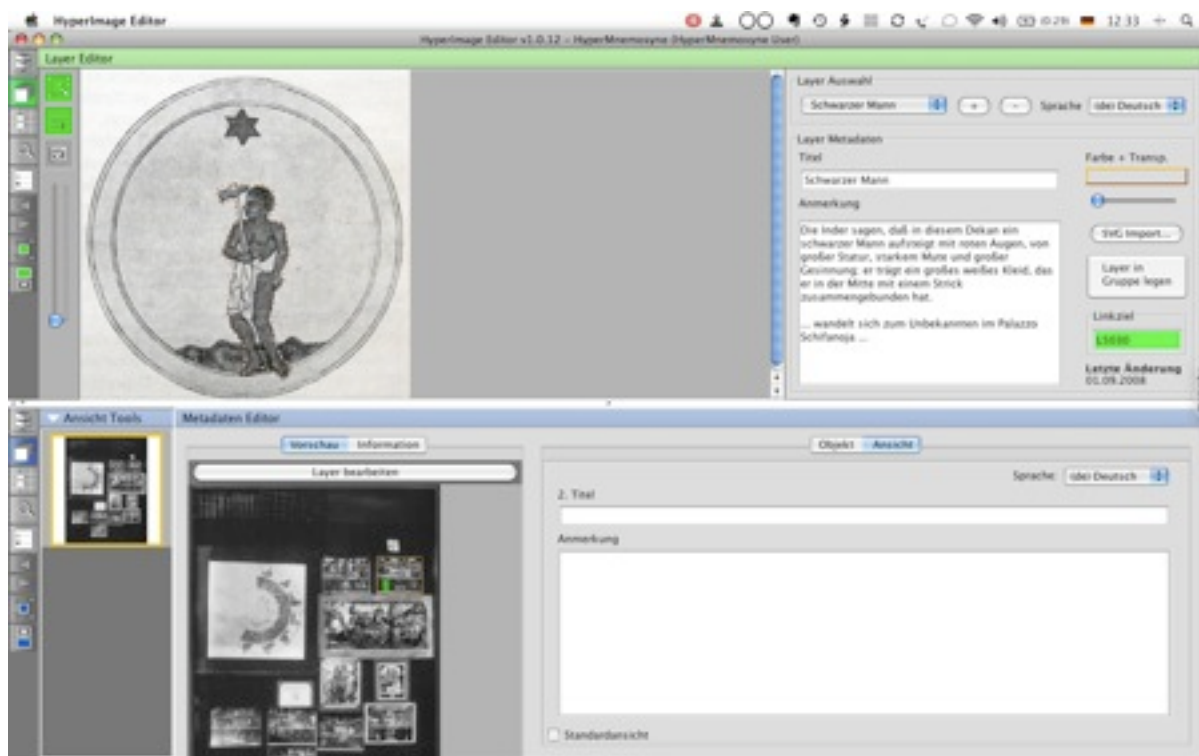
The figure in the upper half of the window is linked to the rectangular green region with a drag-and-drop mouse gesture. The linkage is stored in the database, indexed, at the end exported within the XML file.

Regions are marked independant of resolution. This means that they could be of an size and precision, their ccordinates are relative to the image edges, in contrast to counting pixels. External repositories have to have a WSDL-interface to be connected. Such an interface could be done in one or tweo week's programming effort. The editor produces an XML file that is interpreted by a Flash based reader. A Flash plugin to the browser suffices, the material can be delivered by any web server or locally from a disc.

The Warburg example from the Schifanoia Palazzo looks like this in the reader — clicking the mouse over the appropriate hilited region carries the viewer to the next image, where the chain of image links can be carried on:
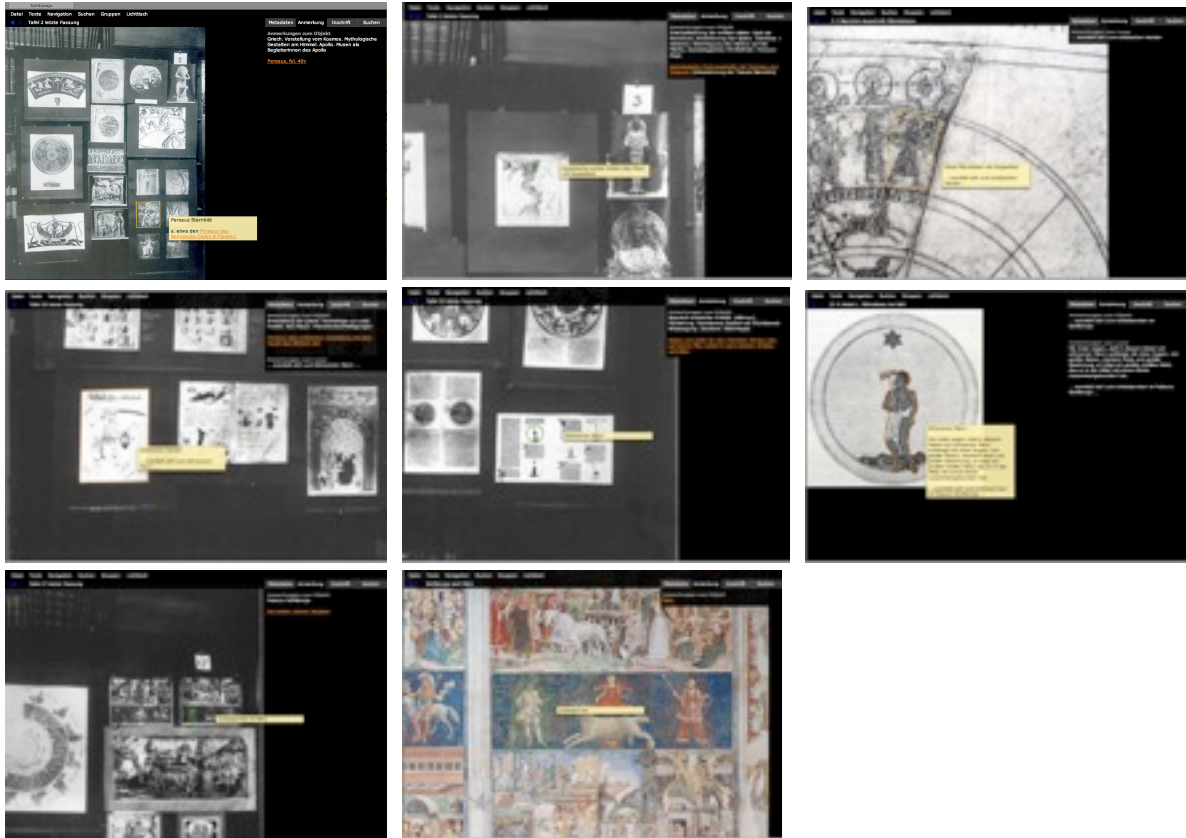
This chain exactly maps the linear argument in the Warburg paper, revitalising the image frames. Annotations explain what significance a link has. These notes are entered within the editor when specifying the links.

In a prepared lighttable an arrangement of images looks as follows:
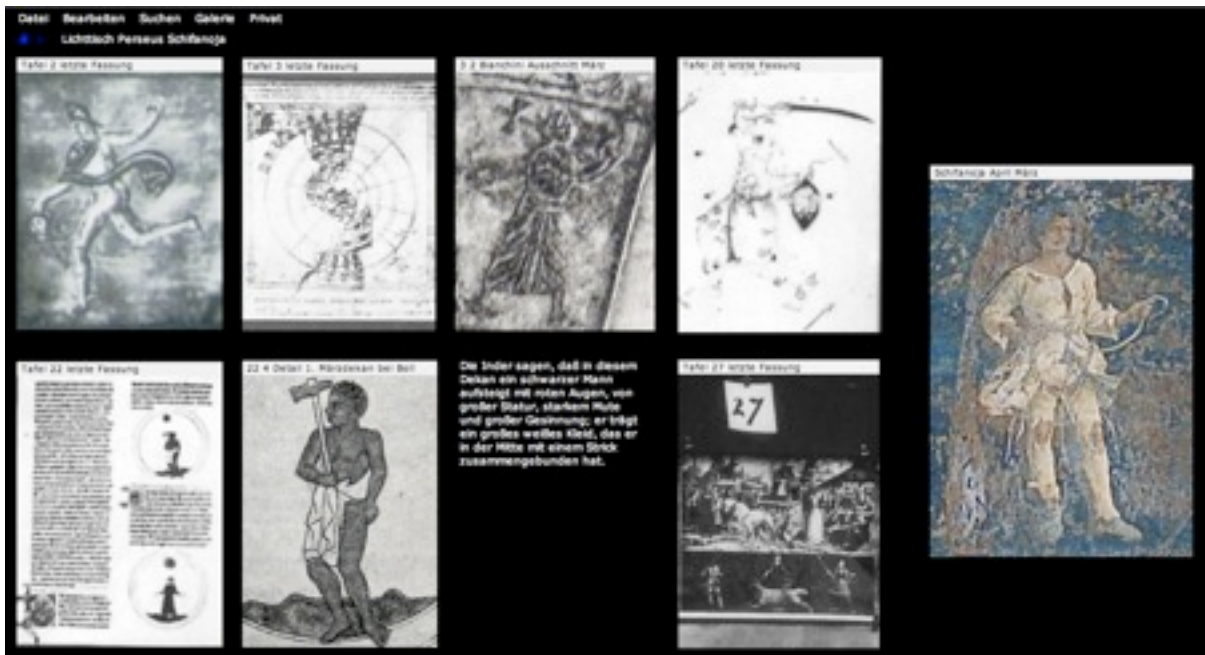
This is a technical realisation of what Johann Gottfried von Herder said like this: »All notions hang in the chain of truth at one another; the

tinyist may not only serve the biggest, but could itself become undispensible.«[16] Or: God is in the details!

When the filing box answers

Arriving at the last section of this paper, at the filing box, that, if taken care of properly, answers its operator.

Luhmann's biggest problem with the box was to correctly re-place notes to their proper location.[17] At least this is something computer technology has freed us from. Storage and retrieval are the easiest duties for computers.

But: how does the filing box become productive intellectually? This stems from the same sources as the difficulty putting notes back: from complexity.

The need for a filing box always evolves from the problem of complexity to have much more than could be overseen. Computers help to govern the masses, but to select the relevant, a human brain is necessary.

What, then, is a good filing box? Does its quality come from the wisdom of the individual notes? Somebody trained in ontology might think so. Luhman, as often, finds a totally different approach:

»Contrary to the structure of updatable options of references, the importance of the concretely noted is small. […] The communication with the filing box only becames fruitful at a higher level of generalisation, at the level of communicatively relating the relations.«[18]

To put it differently: by cross referencing and the meshup that follows from it. *The net is the filing box.* By cross referencing the spider like net system[19] of entries emerges. "Every note is an element that gains its qualities only by virtue of the net of reference and back reference in the system."[20] It is not just the chain as Herder thought, in postmodern times it is the net of atoms of knowledge backing up one another mutually.

But does our filing box called Hyperimage actually give answers to their operators? Some years of use will certainly be necessary before surprising results occur. As Luhmann states, that his »filing box on occasions provides for combinatorial possibilities that never have been planned, thought of, prepared for in advance."[21]

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[16] Cited after Warburg: Ausgewählte Schriften und Würdigungen, p. 604. Transl. M. W.

[17] We can watch the master himself work with it at youtube: http://www.youtube.com/watch?v=tu3t_zzHJJs

[18] Luhmann, Niklas. "Kommunikation mit Zettelkästen — Ein Erfahrungsbericht." In Öffentliche Meinung und sozialer Wandel, edited by Horst Baier, Hans Mathias Kepplinger, and Kurt Reumann, 222-228. Opladen: Westdeutscher Verlag, 1981. S. 227. Trans. M. W.

[19] Luhmann, N. (2000) Biographie, Attitüden, Zettelkasten. In: Niklas Luhmann — Short Cuts. P. Gente, H. Paris, and M. Weinmann, eds. Zweitausendeins, Frankfurt/Main, p. 26. Trans. M. W.

[20] Luhmann (1981), p. 225.

[21] Ibid., p. 226.

I asked our pilot users, and a very exciting answer came from the biologists and their biodiversity project at the Museum für Naturkunde in Berlin. Prof. Hannelore Hoch and her group searches for the inner workings of evolution of species and can report that use of images, in this case e. g. tomography data, maps and localisations, brought about insights that have not been possible before and without this kind of media.

But additionally there are also new insights concerning the evolutionary status of species that could be gained by locating them on maps and backtracking the findings to their origins, that is, by using the image index. By this way it became clear that one species always occurs »sympatrically«, that is, together with an other one. This suggests evolutionary dependencies that were not known beforehand.[22]

Last questions

There are two of them: what comes after, and a crucial question, or, following Faust: the so called Gretchenfrage.

First one: the after. The Deutsche Forschungsgemeinschaft, as we know by now, will finance to build HyperImage into prometheus, the distributed imaga database for research and academic education.[23] This hopefully will bring the required masses of pictorial references to watch the net grow.

Now the Gretchenfrage. Aby Warburg, finding God in the details, obviously stayed with the all mighty. But what about the second giant on who's shoulders my second foot stands?

Talking to Alexander Kluge, for which character from Faust Luhman would opt as the most interesting, Luhman answered:

»Probably for Mephistopheles. My part is always with the devil. He discriminates the sharpest and sees the most.«

And beeing asked about his major character attribute, and whether it may be curiosity, Luhmann, always ready for a surprise, answered:

»Stubbornness«, in german: Bockigkeit.[24]

I don't know what your interpretation of this confusing statement is, but I thank you for your attention anyway.

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[22] Hoch, Hannelore (2008). pers. comm.

[23] http://www.prometheus-bildarchiv.de/

[24] Luhmann, N., and A. Kluge (2004) Vorsicht vor zu raschem Verstehen. In: Warum haben Sie keinen Fernseher, Herr Luhmann? — Letzte Gespräche mit Niklas Luhmann. W. Hagen (ed.). Kadmos, Berlin, p. 77. Transl. M. W.