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DLUWANG, A NEAR-PAPER FROM INDONESIA

INTRODUCTION

There has been much discussion throughout the years what exactly paper is and what not. For analytical reasons a distinction can be made between materials defined as true paper, near-paper and not-paper. Several terms for near-paper are proposed such as proto-paper and pseudo-paper, I prefer the term near-paper. By this different materials are meant that can on the one hand not be qualified as genuine paper but on the other hand look like paper and are in use as a writing material. I'm referring here to matters as crude bark, such as from birch tree or the *Aquilaria* tree, beaten tree bark (generally known as *tapa*), pith like that of the *Cyperus papyrus* or the *Tetrapanax papyrifera* (in the past often called Chinese rice paper), etc. These near-papers play an important role in early history in general and more in particular in the origin and development of true paper. Especially its role in local history is a fact that has often been overlooked.

The following is an example of such a near-paper, an example from Indonesia. I would like to show what it is made of combining a semantic approach with results from my fieldwork, literature research and scientific analysis. Finally I'll briefly go into how it is made, some of the uses and the culturo-historical context of the material under Dutch colonial rule.

The Indonesian material concerned is in Javanese vernacular called *dluwang*. It is mainly known as a writing material from Java and Madura, Madura being a relative small island of the northeast coast of Java. Especially Javanese-Islamic manuscripts are written on this material. Many experts on Javanese language and literature wonder what *dluwang* is. There is much confusion about what it is actually made of and whether or not it is a paper at all. Some suggest it is made of cotton, others hint it is made of cassava. As for the origin China is very popular, a few people however think *dluwang* originates from Java. From the side of Indonesian literature and language sciences I received the request to investigate and study this writing material. In May 1994 I started the one year project with a Dutch government grant. At the end of that year I spend three months doing fieldwork.

THE SEMANTIC APPROACH: NON-EUROPEAN SOURCES

One way to find out more about a material is through what I shall call the semantic approach. This search for the meaning of a word that designates a particular substance often proves very fruitful.

In Javanese two vocabularies can be distinguished, each of them highly developed: the honorific vocabulary (*krama*) and the non-polite one (*ngoko*). The word *dluwang* (preferred spelling) belongs to the non-polite form of Javanese. There is however also a polite form called *dlancang*, but that is seldom found.

Throughout Old Javanese literature we find ample proof of *dluwang* being used for clothing. It is mentioned three times in the Javanese version of the Ramayana, the first substantial work of Javanese literature, giving written evidence as far back as the 9th century. It is also mentioned in three texts from the 12th century court of Kediri. From the contents of these and seven other Old-Javanese texts we can conclude that in the pre-Islamic era, roughly before A.D.1550, clothes made from *dluwang* were worn by clergymen, especially ascetics.

Sometimes kings and other noblemen would retire in the jungle and live the life of a hermit, wearing the attire of the poor and humble: cloth made of *dluwang*. That is why we find the *ngoko*-form, the non-polite form, and not the *krama* in spite of the fact that it sometimes was worn by men of high status. We also read that in order to arrive at the finished product the material needed to be beaten. Men of religion had the right to plant the necessary raw material and the right to levy taxes on the trade in the final product. Apparently the commodity was widely used at the time and served as a source of income for the monasteries. It probably protected the bearer against bad spirits and other evil influences for which a magical ritual must have been performed by the religious caste. The above is corroborated by a few texts from early Javanese-Islamic literature, a literature that came into existence when Islam was in the ascendant in the 16th century. So *dluwang* was a cloth made of plants that needed to be beaten in the process, it was a cloth for the poor and the religious. Moreover it probably had a magical function.

Early Chinese travel accounts report the use of palmleaves for writing and the absence of paper on Java. They also make mention of a 'sort of paper' that served as a picture carrier for the *wayang beber*, a form of theatre in which painted scrolls are used. Other sources specifically mention *dluwang* as the material in use for this art form. First painted on palmleaves *dluwang* was made use of as a picture carrier for the ancient *wayang* art when the court of the King of Jenggala moved to West Java in 1244. The rural performances were associated with healing, stressing the ritual function of the act.

The royal origin of the art is found in the choice of the *krama* word for *dluwang*: *dlancang*. Several old *wayang beber* on *dluwang* survived the heavy attacks of the elements until this day. The younger ones are painted on paper. Again with *dluwang* not a true paper but a sort of paper is meant and a substance too associated with the healing forces of magic.

At the beginning of this century five neolithic stone barkcloth beaters were excavated at a prehistoric temple complex on East Java, on West Java one stone beater from prehistoric times was dug up. These form the first evidence of the existence of Javanese *tapa*, evidence that dates back to the neolithic era. And it shows the magic-religious use of the material. Afterwards metal *tapa* beaters from a later period were unearthed.

From the above it seems safe to conclude that long before Islam enters the Indonesian Archipelago as well as in the early Islamic period on Java *dluwang* stands for *tapa*. A cloth made of plants, that needs to be beaten in the process, is not a true paper, but a sort of paper. The beaten treebark is then mainly employed as a material for clothing and partly as a picture carrier. Besides the matter has protective and healing qualities after the necessary magic-religious rites are performed. This magical role is well known in other *tapa* producing cultures as well. Thus far the search for the word *dluwang* or *dlancang* in non-European sources.

THE SEMANTIC APPROACH: THE DICTIONARIES

For the denotation of the word *dluwang* the appropriate dictionaries some of which go as far back as the first half of the last century, are of course a rich source. What do these dictionaries of Javanese, Madurese and Sundanese, the language spoken on West Java, tell us?

Most of them translate *dluwang* into 'paper' though some reserve the term for indigenous paper and use the word *kertas* for foreign or imported paper. *Kertas* is a loan word from the Arabic: *qartas* or *qirtas* meaning paper or papyrus depending the context, a word in turn loaned from the Greek.

Now the confusion between true paper and near- or not-paper is a very common one, even today. Indeed we cannot expect laymen to know or to recognize even the fine distinction between these similar materials. As a matter of fact an early Dutch travel journal makes mention of a people in West Java being clothed in 'white paper made from the bast of trees'. Other registers refer to 'Javanese paper' or 'Kailic paper', paper made in the old Kingdom of Kajeli on Middle Sulawesi. On closer investigation they all refer to *tapa*.

Later when *dluwang* was used as a writing material colonial officers often employed the word 'Javanese paper' or 'Ponorogo paper' for *dluwang*, Ponorogo after the main centre of production.

Other dictionaries apparently struggle with the same problem: how to differentiate between local and foreign or imported 'paper'. For the last product the compilers reserve the word *dluwang* and for the native near-paper they use *dluwang* with the adjective *gendong* or *kemplong*. These adjectives are so-called onomatopoeic words, words that imitate the sound of the thing meant. In this case *gendong* and *kemplong* imitate the sound of the tapa beater as it hits the wooden board. As such the verbal form is already known in Old Javanese texts.

At least 150 years ago the distinction between *kertas* and *dluwang*, between imported and indigenous paper disappears. By this time the Dutch import loads of paper and the production of *dluwang* is fading out. Not only in Bahasa Indonesia but in Javanese as well *kertas* takes on the general meaning of paper, be it foreign or native. As a matter of fact today it looks as if the word *dluwang* will vanish completely from the Javanese vernacular.

Only in some rural areas on Java people are still familiar with the word *dluwang* where they use it as an equivalent for *kertas*. This loss of discrimination has in a few dictionaries lead to curious phrases like *kertas saeh*, *kertas kayu* and *dluwang kayu*. Literally *kayu* means 'wood' so the last two phrases stand for (near-)paper made from wood. The function of the adjective 'wood' is to differentiate it from regular paper for which plain *kertas* or *dluwang* is employed. The Sundanese of West Java sought another solution to the problem. They combined the word for genuine paper *kertas* with an adjective that stands for the material of which the local paper is made namely *saeh*. This is Sundanese for the papermulberry tree, the *Broussonetia papyrifera* Vent. So *kertas saeh* means paper made from the papermulberry tree. Scrutinizing the relevant dictionaries support the conclusions drawn earlier. The Javanese do not possess a true paper in spite of the fact that *dluwang* is often called 'paper'. In this case clearly 'near-paper' is meant, an indigenous material, more specifically Javanese tapa. This is stressed by the adjectives *gendong* and *kemplong* and at the same time implied by the adjectives *kayu* and *saeh*.

The Arabic loan word *kertas* must have been introduced at the same time Islam conquered the area and stood for imported true paper. Erroneously *dluwang* has also been reported to signify imported paper. Today mainly the word *kertas* is in use for paper, while the practise of the word *dluwang* is ebbing away.

What is new is the observation in the Dutch journal that the paper made from the bast of trees is **white**, like the best *dluwang*. Likewise new is the indication from the Sundanese phrase that the raw material for the tapa is the bast of the papermulberry tree.

In short the semantic approach yields to important results. With great probability we can assume that *dluwang* is a Javanese tapa, first utilized for clothing and later for writing material. It is possibly made from the papermulberry tree.

THE RAW MATERIAL: FIELDWORK AND LITERATURE

The question of what *dluwang* is made of is in one respect not an easy one to answer. I received a few possible answers doing fieldwork and several raw materials are suggested by the literature. Whatever plant is implied all sources agree *dluwang* as any other tapa is produced from the bast of some kind of plant that is the flexible layer between the bark and the cambium.

One informer declared that *dluwang* is also called *kertas kapas*. This name indicates cotton to be the raw material for cotton is called *kapas* in Indonesian. But physically it will be very difficult to beat the cotton bolls to a sheet of near-paper. Another informer suggested kapok but for the same reasons as before this possibility is rejected, the contents of the kapok fruit cannot effectively be beaten to a tapa.

Most of the reports from West Java name *saeh*, the papermulberry tree, as the source. In accounts from East Java *glugu* is often mentioned. The majority of the writers consider *glugu* to be the Javanese name for the papermulberry tree. Than again some suppose *glugu* to be the sugar palm or the coconut palm. Both palms do give fibrous material but that does not come from the trunk. Palms do not have any bark or bast as they do not grow in width but in height, hence they cannot deliver material for tapa. Later biologists identified *glugu* as the papermulberry tree.

In one catalogue of Javanese manuscripts just recently compiled a difference is made between *kertas telo* and *kertas gendong* while the word *dluwang* is avoided. In stead of *dluwang* the author prefers the term *kertas gendong*. *Kertas telo* indicates a paper made of sweet potato, *telo* in Javanese. From this very starchy plant it is impossible to make any kind of paper or near-paper for that matter, it hardly contains any fibre material. How this legend came about still stays hidden for me today. Later I discovered that *kertas telo* is the name of a paper imported from Kwang si, China.

Occasionally four other plants are indicated in the literature: *Gnetum Gnemon* Linn. (a very widely used culture), *Artocarpus elastica* Reinw. (the jackfruit), *Ficus spec.* and *Antiaris toxicaria* Lesch. Except for the first one all are well-known tapa producing plants in Indonesia.

After many detours in the field as well as in the literature five plants are finally deduced as possible sources of *dluwang*. Considering the many times it is referred to the *Broussonetia papyrifera* Vent., the papermulberry seems the most likely candidate.

THE RAW MATERIAL: SCIENTIFIC ANALYSIS

In the beginning of this paragraph I stated that the posed question is **in one respect** not an easy one to answer. This implies that there should be an easy way too. And indeed the most facile way to determine the original plant, or plants, of *dluwang* is by botanical analysis. One plant needs not to be included: the *Antiaris toxicaria*. Its tapa can already effortlessly be differentiated by sensory perceptions from other tapas. First of all this barkcloth is very thick and appears intensive yellowish white in colour. Furthermore the surface is rather resilient and fluffy. More important the latex of this plant contains the highly poisonous substance antiarine that causes cardiac arrest. Fortunately the poison disappears almost completely in the process of tapa-making. Nevertheless small traces however harmless to the human body are left behind. They still can be detected as it gives the tapa a bitter taste. Altogether it will not be very hard to discriminate between a tapa from the *Antiaris toxicaria* and any other tapa.

From the four remaining plants the Rijksherbarium in Leiden took four reference slides of each plant, two bast cuts and two fibre specimen. These were compared with twenty-five *dluwang*-samples taken from public and private collections in Indonesia and the Netherlands ranging from 1875 till today. The results are unambiguous 24 out of the 25 samples reveal that *dluwang* is made of the *Broussonetia papyrifera* Vent, the papermulberry. One sample did not show any characteristics, apparently something must have gone wrong during the preparation of the slide. Anyway an outcome that is agreement with that of the semantic approach.

Out of pure theoretical interest experiments with other methods of identification were set up. Two methods of separation were tested. The Central Research Laboratory for Objects of Art and Science in Amsterdam experimented with a method called thin-layer chromatography (TLC) a method never tested on bastmaterials before. In case of TLC for separation of natural resins the results were disappointing, but the TLC for separation of colours was successful. It can be said however with great caution that this method allows us to distinguish *dluwang* from tapas made of other plantmaterials. At the laboratory of the Conservation Department of the Royal Library in The Hague *dluwang* was tested with the separation method isoelectrofocussing (IEF), again this was never tested on bastmaterials before.

The tests showed that *dluwang* can be distinguished from the bast of the Artocarpus and the Gnetum families. However no distinction could be made between the *dluwang*-samples and the bast of the Ficus family. Nevertheless it did make a distinction within the *dluwang* and the Ficus samples, but one that cannot be explained. Further research on bastmaterials with IEF is needed to clarify this point. Regrettably examination of *dluwang*-samples under X-ray fluorescence (XRF), a non-destructive method easily applied, did not give any relevant outcome. Finally a flowchart was drawn up to facilitate the identification of *dluwang* in places where no fancy equipment is available.

THE PROCESS OF PRODUCTION

Having named the plantmaterial of *dluwang* we can address ourselves to the question how *dluwang* is produced. To reconstruct the production process from the available literature would have been possible. Quite a few articles elaborate on the way *dluwang* was made but the authors were mainly Europeans who did not show much insight into and respect for indigenous technology. Accordingly the sources are not very reliable. But I got lucky. Though no mention is made of *dluwang* since World War II and everybody thought it to be extinct, I was fortunate to find one family on West-Java that still knew how to make it. At the same time I talked to people on East-Java who in their youth helped their fathers make *dluwang*.

In this manner I was much better equipped to reconstruct the process of production. I don't think we have the time to describe this process into detail, yet I would like to share with you some salient particularities. First of all for those who are not familiar with tapa-production at all a broad outline. After the treebark is stripped off the tree or off the branch it is split into the top layer (the actual bark) and the layer beneath (the bast). The bast is washed and cleared from any irregularities.

Now the crude bast is pounded with a beater to form a sheet. The higher the desired quality the longer the beating process takes. The best qualities are fermented or cooked with lime after the initial beatings. After the second beating the sheets are washed again. Next they are smoothened or even sanded, again depending the quality. Lastly the wet sheets are dried in the sun.

Most striking in the Javanese tapa production is the use of a metal beater. As far as I know other tapa-producing cultures employed beaters of wood, ivory or stone. The Javanese beaters are cast in local alloys with varying percentages of lead, copper, zinc and tin, using the so-called lost-wax method. Lengthwise they show an opening meant to house a bamboo or rattan handle.

The beaters are rather small, normally 10 x 4 x 3cm.

The Javanese discern three or two qualities of tapa. In East Java three qualities of *dluwang* are produced, on Madura and the rest of Java only two. The finest quality is used for the better manuscripts and letter writing; the middle quality for writing paper, simple books, account books, *wayang beber* and bookbinding material; the rough quality for wrapping paper, kites, wrappers and folders. For the best quality the youngest branches are selected, the bast will be fermented as long as two weeks and finally both sides of the beaten bast are sanded with different leaves and polished extensively with a cawri shell. For the middle sort the fermentation time is much shorter and only one side is sanded and polished. The other side is already more or less smooth because it is pressed on a banana trunk to dry. The rough quality does not need much attention, the bast is not fermented and polished at all, usually it is ready within less than a half hour. While on Madura the sanding in first instance is done with a bamboo or rattan beater, on Java this is done with a carved piece of coconut shell. This shell leaves peculiar marks on the finished product, which can help us to identify the origin of the tapa. Local differences are also established in the kind of leaves and beans that are used in sanding and polishing. In neither of the qualities any additions as sizing could be established.

To lengthen the beaten bast two pieces are put together with an overlap of one centimetre, the overlap is beaten till one big piece is formed. This process can be repeated indefinitely. For the *wayang beber* for example the sheets are up to 4 meters long. *Dluwang* is produced in several qualities ranging from a rather refined one to a simple one. This means that much attention has been given to its production. Unlike other tapa-producing cultures anywhere around the world the Javanese employ a cast metal beater, certainly not a cheap implement.

THE CHANGE IN APPLICATION

At the least from the 9th century on people took *dluwang* to clothe themselves. I also remarked that *dluwang* was used as a writing material. Was there a change in application at any time? Indeed as the Javanese developed their Islamic literature they started to use *dluwang* for writing. After a while its purpose as material for clothing must have disappeared, hardly any mention was made of it anymore. Besides the locally grown cotton was well known on Java then and printed cotton was a regular commodity imported from India. Yet it never vanished completely. It was lastly reported as a material for clothing in 1817 and in World War II some Javanese, for lack of better resort to this barkcloth for clothing.

On Java the longer Hindu-Buddhist texts were written on palmleaf. The Old-Javanese Kawi script was incised on palmleaf with the help of a stylus. In the 16th century Islam slowly but surely conquered Java. Whenever a new religion is introduced a new book- and writing culture is introduced at the same time. There is no Islam without the Qur'an, the Holy Book bound in codex form and written in Arabic. So the Arabic script was adapted for the Javanese language and called Pegon. As a Javanese-Islamic literature developed in the middle of the 16th century the scribes were searching for another writing material. To incise the new Pegon letters on palmleaf presented a problem for the leaves would split due to the form of the letters. Of course one could have changed to the use of ink, but there was no tradition in writing texts with ink on palmleaf. Simultaneously there was a strong desire to employ the new book form, the codex. For this palmleaf was also unsuitable because it would break easily on folding. But not only technical considerations were responsible for the change in writing material, also psychological reasons as the desire to discard everything that reminded one of the old religion. A possible alternative could have been paper. However this was very difficult to get, expensive and not widely known. As *dluwang* was already employed as a picture carrier and had a sacral connotation, this was not a bad option. Moreover it was cheap, the people could make it themselves and it could be produced anywhere. So *dluwang* it was.

At the end of the 16th century *dluwang* came into fashion as a writing material for the developing Javanese-Islamic literature. As paper came more available at the end of the 18th century the bigger Javanese courts changed from *dluwang* to expensive European paper for writing their books. In the country the Islamic schools (pesantren) still produced and used their own *dluwang*. For letters beautiful decorated imported paper from China, India and Arabia was already sparsely available. Palmleaf did not disappear altogether, it stayed in use for other Javanese literatures until this century.

In public Javanese manuscript collections an average of 8% consists of manuscripts written on *dluwang*, for the large Dutch collection the percentage is only 2.6%. For some of the Malay and Madurese manuscripts *dluwang* is also used. The oldest known manuscript on *dluwang* is a Javanese-Islamic text from the end of the 16th century, the so-called 'The Book of Bonang'. From that time on *dluwang* is mainly manufactured in order to serve as a writing material.

OTHER APPLICATIONS

Dluwang is also applied to other areas, one of them being the exploit as bookbinding material. A protective cover whatever the form always cost money, meaning that not all the Javanese books are provided with covers. Those that are covered can roughly be divided into two classes:

the simple wrapper and the binding with an envelope flap so typical of Islamic bookbinding. Simple booklets are usually bound in plain *dluwang* wrappers, especially when the writing material is *dluwang* but also when paper is used to write upon.

The bindings with an envelope flap are always covered with leather, often very simply blind tooled. The boards of these bindings can be fashioned out of pasteboard. Surprisingly they also can be build up of thin stripes of *dluwang*, written or blank. These pieces can be blank left-overs but sometimes they originate from cut-up older manuscripts. This phenomena can be recognised in manuscripts written on paper as well as on *dluwang*. When bound in leather and the text written on paper sometimes the endpapers are made of tapa. In principle all kinds of combination of *dluwang* and paper can be observed in Javanese bookproduction.

In the days of the VOC (United East Indian Company) paper is a very scarce article. The need is always high, the officials are eagerly looking forward to the next shipment of Dutch paper. Chinese paper is rejected because of its so-called weakness. This impossible situation is soon recognized and in 1665 the VOC permits Jacob Jorisz van Schiedam to build a papermill in Batavia. Unfortunately the mill does not exist more than twenty years. One of the reasons being a constant shortage of local rags for the indigenous people do not wear many clothes. When the VOC clerks are very desperate they sometimes reach for *dluwang*. Under those circumstances *dluwang* is considered an alternative to paper, though solely as a wrapping paper and material for a folder. These practices continue into the Dutch colonial era.

DUTCH COLONIAL RULE

When the Dutch government takes over the bankrupt estate of the VOC in 1800 their interest in practical problems of administration is very little. The mother country is occupied by the French and the many fights to conquer the Archipelago are still to be delivered. Yet the shortage of the European paper market at that time is painfully felt in the East as well. Many a fresh colonial official complains about the difficulty to keep book. This causes one of them to suggest *dluwang* for envelopes and Chinese paper for letter writing. In this period many *dluwang* folders are in use by the local as well as the colonial administration. Halfway through the century the post office in Batavia ordered 10.000 to 15.000 sheets of *dluwang* from which can be inferred that *dluwang* as a wrapping paper is still in big demand. On a smaller scale this demand still exists around the turn of the century.

By the end of the 19th century the scientific interest in many aspects of Indonesian society grows. Expeditions are set up which result among other things in the (re-)discovery of archaeological sites and of new species of both flora and fauna. Vast areas are under development and new agricultural products are introduced, fibre plants being one of them. *Dluwang* draws the attention of the colonial rulers when they hear of a fabulous Japanese paper made of the same raw material. Samples are sent to Dutch laboratories. In spite of the fact that the outcome is very favourable the Ministry drops the idea of further development. The export cost would be too high for the fibres are to be exported to the Netherlands for paper production.

Later there is much discussion about whether or not it would be profitable to develop a local paper industry in Indonesia. It is not until 1923 when the first paper mill is established on Java.

The increasing scientific attention in Indonesian culture make some scientists realize that certain aspects of indigenous culture are on the verge of disappearing: museology is born. In fact the Ethnological Museum of Leiden houses the oldest collection of its sort in the world. Many of its artifacts from Indonesia are collected in this period. Some scientists realize that soon the production of *dluwang* would disappear. They start to collect the metal beaters and other tools.

At the turn of this century the only production centres left are Tunggilis on West Java and Tegalsari on East Java. Under the Ethical Policy a last revival of governmental interest can be noticed. Some departments try to arouse the interest of publishers and artists in the mother country. Although some Dutch books are bound in *dluwang*, the efforts soon fail.

THE LAST OF THE MOHICANS

After World War II only one family in Tunggilis, near Garut is still engaged in making *dluwang*. The family head Pak Bisri is a small farmer on the side otherwise he can barely make ends meet. On instigation of the governor who was born in Tunggilis the Provincial Department of Forestry and the provincial administration order *dluwang* from Pak Bisri to make folders. By the end of the sixties this source of income dries up: the orders stopped coming. When the Pak Bisri dies in 1965 his wife takes over till her death in 1980. In 1968 the curator of the Paper-historical Department of the Royal Library in The Hague acquires via a Dutch paper mill some 100 sheets of *dluwang* made by Mrs. Bisri. It is no doubt the last substantial order of *dluwang*. Two sons earning a living by other means still know how to make the material. At the end of 1994 one son shows me how to make *dluwang*. He will most likely be the last one that ever made *dluwang*. A Javanese tapa as we now know. A material made from the bast of the papermulberry. A material that in first instance was used for clothing.

A material that was used as a writing material from the end of the 16th century on. A material already mentioned in literature sources dating back as far as the 9th century. A material that is now almost completely vanished. A material for which there is no use anymore in the present digitalized world.

The farmer's son who took his worn metal beater out of the cabinet to beat the bast to a sheet of *dluwang*, alas he is the last of the Mohicans.

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