

On the Manufacture of Ink*

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The main materials for producing manuscripts are paper, pen and ink. This trivial statement does not mean that the manufacture of any of these materials is an easy task which could be off-handedly performed. As many manuscripts in the National Archives and in other collections in Kathmandu and along the Nepal-Tibet borderlands have survived over centuries, they must have been produced with great effort and care and bear witness to a craftsmanship with a long tradition. Some of these manuscripts contain calligraphy of world renown and show skill and mastership of the art. To get a lasting result each step of their production, including the production of paper, pen and ink, has to be performed with great care. Only if these are of the highest quality can the scribe create a beautiful and lasting manuscript.

Also for proper restoration of manuscripts knowledge of their production and the materials used for their production

is absolutely necessary. The restorer should know the components used for making paper, size and inks. Since there exists some written material on the manufacture of paper and ink by Nepalese scholars¹ and the tradition of these crafts is still alive, it might be of interest to compare this account with the text and translation of a Tibetan source, which is included in a work called *Bzo gnas nyer mkho'i za ma tog* of 'Jam-mgon 'Ju Mi-pham-rgya-mtsho (1846-1912)².

The *Bzo gnas nyer mkho'i za ma tog* (*Craftsmanship: A Basket of Necessities*) is a remarkable source for the study of such minor crafts and techniques as the manufacture of incense, ink (including gold and silver inks), pen, paper, casting of metals, dyeing of different materials etc.³ The chapter on ink⁴ is the second in this text and elucidates nine different methods used in the manufacture of ink.

*For helping me to translate this text from the Tibetan original I am very much indebted to some of my Tibetan friends, of whom I would like to mention especially Pema Jigre and Wangdu Lama. To Philip Pierce I owe the correction of the English translation and a careful draft reading. For all shortcomings I am alone responsible.

T E X T

bzo gnas fier mkho'i za ma tog

[Fol. 2b,6]: snag tsha bzo ba
[3a,1] ia / thañ ma sgron śiñ
ñam/ gro ga sogs kyi śun pa
skam por me sbar la khog ma dra
ba can du me lce don pa'i dreg
pa'am/ mar me dañ dpal 'bar sogs
kyi dreg pa'am/ tha ma ślañ
dreg pha ba sgo sgo⁵ skam po
žal 'dag gi⁶ g.yog [3a,2] nas
bsreg pa lta bu de dños rgyu'o/
/de la spyin gyi dañs ma bskol
pa grañ nas chags tshe lces mi
phig tsam sbyar ba thañ rkyal du
mñe bsrub yañ yañ byed ciñ/
rlan dañ bral na chus bran te
yañ yañ lde gu byas nas 'dul
ba'o/ /'dir kha cig lhañ tsher
thañ [3a,3] rkyal du mñe bsrub
byas pas gži byas nas dreg pa
sogs kyi bsgyur⁷ ba'añ byed
srol yod/ snag tsha de la mñe
bsrub dus sam/ ślad nas kyañ
ruñ ste/ pi liñ ka ko la'i chus
spañ⁸ na dgun mi 'khyag ga bur⁹
tañ ku tsandan dkar po'i chus
sbyañs pas [3a,4] dbyar me¹⁰
rul/ gla rtsis dañ gi wañ gi
chus phab na śin tu rgyug ciñ mi
'chad/ rgyal mo ka ra dañ rgya
skeg¹¹ gis chus phab na kha dog
snum/ li śi ru rta ga pur rgya
spos spañ spos tañ ku śu mo za
ar nag rñams kyi chus phab na
dri bzañ/ yos tshig khu ba dañ
be khrag [3a,5] gñis kyi dvañs
ma blugs na dñul 'od 'chor¹²/
spyi ga žur¹³ khu bas mthiñ
mdañs/ skyer śun khu dañs blugs
na gser mdog skag khus zañs
mdog 'byuñ phyir gañ 'dod bse/
dam ches pas mi rgyug na/
dar mtshur ram tsha la bsreg
thal ñuñ [3a,6] tsam btab/
śla na nas sam sran ma'i rdog
po btab pas des chu 'thuñ nas
gar bar nus/ spyin med na
gro nas kyi yos khu'am/ thañ

khrag sogs dam du sems can
rjud pa'i chu ser dvañs ma
khrag med pa sogs bses pas
'od dañ ldan žiñ dgun 'khyags
[3b,1] dus phyir 'jib mi 'oñ
bzañ yañ/ rlan dañ phrad na
rkyen cher mi khyags so/
/bul dog ja bskol nañ btab na
'ju ba de snag tsha'i dam gyi
mchog go žes kyañ bśad/ gžan
yañ snag tsha bzo ba'i rgyu dgu
yañ bśad do/ /dañ po dreg pa
las sbyar tshul ni/ snum nag
ni [3b,2] dreg pa buñ¹⁴ che bar
'oñ kyañ 'dul cuñ dka'/ kyi
lce'i dreg pa 'dul śla legs
kyañ 'od chuñ/ śiñ dreg legs
la boñ che'o/ / dmar chen
rtse ba'i dreg pa mdog legs boñ
che 'dul śla yañ rul rkyen/
de'i phyir dgun dus dmar chen
rtse drag dañ/ yañ na snum
[3b,3] dreg kyi lce'i dreg pa
mñam sbyar byas na mdog legs
'dul śla boñ che ba'i dgos pa
yod/ de la mthiñ ka 'dod na
ram gyi kha chu nag po dañ spyi
bžur khu ba/ śho skya 'dod na
spyi bžur khu ba kho na/ dñul
mdog 'bras dkar dañ ma nu ru
rta'i khu ba cha mñam mañ du
btañ [3b,4] ste yun riñ fi mar
mñes bas 'oñ/ dmar mdañs
mtsher bar 'dod na/ snur
thag chod khar gtsod khrag
spañ ba'i dvañs ma cuñ zad
btañ nas me la mi bsten par ñi
mar mñes pas 'oñ/ śin tu
gnag ciñ 'od che bar 'dod na la
chu cuñ zad btañ ste chu grañ
mi blugs [3b,5] par drod kho
nar brtan pas 'oñ/ de rñams
gañ byed kyañ ma nu ru rta'i
khu ba btañ bas 'jam la rme
ba'i gñad yod do/ /dam gyi
spyin chu'i tshab 'bras khu ñag
gcig gis byas na 'dren bde skam
mgyogs dbyar mi rul lo/ /sug
chu'i dañ ma dañ sbyin¹⁵ chu
cuñ zad btañ na 'od che//

[3b,6] spyir yun riñ du mñes pa
 dañ/ mñe dus skor phyogs ñes
 med du byas na mi 'chad pa
 'dren bde la gnag sñiñ¹⁶ ñuñ/
 'od che ba'i gnad yod do/
 /gñis pa me tog las bzo tehul/
 snum gyi mar me'i rtser chags
 pa dreg pa nag po'i me tog ni
 snum dreg dañ 'dra/ me tog
 gžan 'bras [4a,1] khur ha lo
 smug po dañ/ rgya lcam me
 tog gñis so sor sbañ la nag por
 gyur ba dañ lhan cig bsre/
 de la tshos khu dañ mtshur nag
 ra khrag cuñ zad btañ nas bris
 pas/ dañ por snag tsha 'chiñ
 kha sla 'dren bde ba žig 'byuñ/
 [4a,2] bris zin nas lo re bžin
 gsu 'gro/ de ni tsha bul sogs
 ma btañ bar me tog la byed
 tshul lo/ /gsum pa sa la¹⁷
 byed tshul ni/ sa smyag gėin
 po spyin cha gsum/ žib zan
 cha gcig rñams bres la goñ du
 bya/ skam thag chod pa dañ me
 la btsan [4a,3] bsreg bya/
 dmar por soñ ba dañ/ der phral
 gtun khuñ me thub kyl nañ du
 mñes nas cuñ zad dro ba de la
 ñe sñi ma niñ dañs ma cuñ zad
 dañ/ spyin chu blugs la chu
 yod na mchog tu bzañ/ med na
 yañ ruñ yun riñ mñes pas mdog
 nag boñ tshod¹⁸ che [4a,4]
 'thub¹⁹ žal ba thab tshañ dañ
 thab kha la byug pa'i snag tsha
 mchog yin no/ /bži pa phab ba
 sgo sgo²⁰ las byed pa ni/ ba
 mo du gol yañ zer/ de skyes
 phral gyi khres po thus la/
 me la btsan bsreg bya/ dmar
 tiñ ñe ba de chu la bskyur/
 de bton nas gtun [4a,5] khuñ du
 mñes skam thag chod nas bños
 la ñe sñi ma'i khu ba dañ spyin
 chu blugs/ yun riñ mñes pas
 mdog nag por che ba 'oñ ste/
 'di nag ro bags²¹ la byug pa'i
 'os yin no/ lña pa lci ba
 las bzo na/ ba glañ gi lci ba
 ser ka ma btus/ de [4a,6]
 yañ sña lci ser kha ma yin na
 bzañ/ de mer bsregs dmar por
 soñ dus chu la bskyur nas bton/
 de nas žib zan mtheb kyu skam

po bsreg pa chur bsgyur²² ba
 cuñ zad bres te/ gtun du
 bsgyur²³ tshul goñ ltar byas
 pas mdog sñi tu gnag pa 'oñ
 [4b,1] ste nag rtsi bya ba'i
 'os so/ /drug pa ser ša la²⁴
 byed tshul/ dbyar kha'i ser
 ša chad²⁵ sla ba 'dzañ²⁶/
 bdun pa tsi dra ka'i 'bras bu
 smin pa de rlon pa yin na khab
 kyis btseg pa'i khu ba lcags
 snod du blañ/ skam po yin na
 chol tsam brduñ la lcags snod
 du chur [4b,2] sbañs/ ñi mar
 'dul bas khu ba smug nag 'byuñ
 bas/ thar nu dañ mtshur nag
 gi khu ba dañs ma blugs nas
 bris pas snag tsha mchin kha/
 drug²⁷ sñi ñe ba/ 'dren bde
 mo žig 'byuñ/ brgyad pa ni
 dud 'gro'i rgyuñs pa khrag dañ
 rtsa dañ lkog²⁸ pa med [4b,3]
 pa cig tshon tsam rdza
 phor 'jam po'i nañ du blug
 de la goñ gi dreg pa rñams gañ
 yod btab la mñe/ chu 'jam
 tsam blug /gar sla ran por
 byuñ ba dañ bris pas/ 'dren
 pa de²⁹ mo rañ min pa'i mdog
 legs po gcig 'oñ/ 'di me ñi
 mi phog pa'i [4b,4] žal ba sogs
 la byug na legs/ rgyuñs pa
 che na kog goñ bas tshod zin
 par bya'o/ dgu pa la phug
 brdar gseb dreg pa gañ 'dod cig
 blugs/ lag pas mñes la chu
 gtsañ cuñ zad blugs te btsir
 bas phral du snag tsha 'byuñ
 ste/ mdog legs pa [4b,5] rañ
 min yañ 'dren sñi tu bde ba
 gcig 'oñ/ yun riñ na cuñ zad
 yañ 'gro ba yin/ khral³⁰ du
 snag tsha dgos na 'di dañ
 rgyuñs pa la byed pa gñis
 mgyogs snag yin no/ snag
 tsha sbañ tshul snag bum gyi
 nañ bsros la la chu blug
 /de nas grañ ba dañ chu thig
 blug [4b,6] pas gžan gyis bris
 kyañ mi 'oñ/ rañ gis 'bri na
 snag bum bsros la tsha la'i
 shub blugs pas 'bab par 'gyur
 ro/ /mtshal 'dul lugs 'og tu
 tshom sbyor skabs su 'chod/

Translation

Concerning the manufacture of ink:

the soot which comes from a flame (directed) into a pot (turned upside down) over a grate when one burns the dry bark of larch or birch etc., or the soot of a butter lamp or of a torch³¹ etc., or- the worst (quality) - the soot of a pan, or dry puffballs (*Bovita*) which are covered with a mud plaster and are burnt- (things) like these provide the main substance. To this is added the boiled solution of glue which has cooled and congealed to the point where one's 'tongue'³² can no (longer) pierce it. (This then) is repeatedly pressed in a leather bag, and when it is free from moisture some water is poured repeatedly to make a mixture, which is ground to powder. At this point it is also the custom among some people to press mica in the leather bag and by this (means) produce the base, which they mix with soot etc. If one soaks this ink with a pepper (*Piper longum*) or kakola (*Piper cubeba*) decoction at the time of pressing or even later, which is all right too, then it won't freeze in wintertime; if one soaks it with a decoction of camphor, *tang ku* (*Peucedanum sp.*) and white sandalwood, then it won't go bad in summertime. If one adds musk and solidified cattle bile, then it will be extremely fluent and won't cease to flow (when one writes with it). If one adds rock sugar (*rgyal mo ka ra*) and lac, then the colour will be saturated. There will be a good smell, if one adds decoctions of clove, *Saussurea lappa*, camphor, *Vuleriana wallicchii* DC (*rgya spos*), *Nardostachys jatamansi* DC (*spang spos*), *Peucedanum sp.* (*tang ku*), *shu mo za* and *ar nag*. If one pours in a decoction of roasted barley and resin of an oak tree (*be khrag*), then a silver shine comes out. From a decoction of *Saussurea sp.* (*spyi bzhur*) the colour will be bright blue; if one pours in a clear

decoction of barberry bark (*skyer shun*), the colour will be golden. It gets a copper colour from a decoction of lac dye (*skag*). Therefore one should mix (with the soot) whatever one wishes. If it does not flow by reason of a too solid consistency, then one puts merely a few ashes from burnt alum or borax into it. If it is too thin, then one puts some grains of barley or peas into it, which absorb the water, and (the ink) becomes thicker. If one does not have glue, then by mixing into a binder consisting of a decoction of roasted barley, wheat or resin etc. the clean lymphatic liquid of weak animals, which should be free from blood etc., it becomes shiny and it is good too in that it won't blot in freezing wintertime. If it comes into contact with moisture, usually it does not freeze. If one puts soda in boiling tea, this melt is said to be the best binder for ink.

Further, the nine methods of preparing ink are likewise taught. First, the method of making it from soot. Although black oil yields a huge amount of soot, it is somewhat difficult to pulverize. The soot of *Gentiana decumbens* (*kyi lce*) is easy to powder and good, but of little luster. The soot of wood is good and copious. The soot of *dmar chen tse ba* has a good colour, is copious and easy to pulverize, but for some reasons (the ink) goes bad. Therefore *dmar chen rtse ba* is best in the wintertime, and if one adds either the soot of oil or *Gentiana decumbens*, this should give a good colour, be easy to pulverize and yield a copious amount. If one wants azure blue, (one should add) the black surface layer of some indigo dye solution and a decoction of *Saussurea sp.* (*spyi-bzhur*). If one wants a light blue, (then one takes) a decoction of *Saussurea sp.* only. A silver colour results when one combines in equal portions a decoction of white rice and *ma nu ru rta* (?)

and presses it for a long time in the sun. If one wants a glittering red colour, one gets it by putting in a little bit from a decoction of completely crushed *khar gtsong/d (?) khrag (?)* and pressing it in the sun and not in front of a fire. If one wants an extremely dark and bright (ink), it will result from adding a little shallac (*la chu*) (to the ink), while keeping the temperature warm without pouring in cold water. No matter which (of these) one makes, the main point is that a smooth (ink) free of sediments³³ (results) from one's adding a decoction of *ma nu ru rta*. If one makes (ink) only from rice water as a substitute for glue binder, then (this ink) is easy to write with, dries quickly and does not go bad in summer-time. It gets bright by putting a little bit of glue solution and refined *sug chu* (into it). Generally, if one presses it a long time and changes the turning direction when pressing, (then) it will not cease to flow, (while writing) will be easy to write with, and there will not be much ink sediment. The main point is shininess.

Second, the method of making it from the top of a flame. 'Flower' (*me tog*), the black soot which forms at the top of an oily butter lamp, is similar to soot from oil. Other flowers (*me tog*): one soaks *Macrotomia (?) (ha lo smug pa)* and *rgya lcam me tog (?)* both separately in rice water, and (when) they turn black, one mixes them together. After one adds to this a little bit of a coloured liquid and a black pigment and goat blood, and then writes with it, this ink appears to be one which binds easily and is easy to write with at first, but it fades within a single year from the time of writing. That is the method of making (ink) from 'flowers' without adding salt, soda etc.

Third, the method of making it from earth. Mix three parts of fine *sa-myag* and

glue (on the one hand) and one part of fine flour (on the other) and make a small ball. Be sure that it is dry and burn it vigorously in fire. When it has turned glowing red, it is immediately ground in a fireproof mortar; if into this (powder) then, when it is only slightly warm, some clean decoction of *nye shing ma ning (?)* and glue is poured, and water as well, it becomes a prime-quality (ink). It is all right, too, if there is no water, and by grinding a long time, it will get black, (and) there will be a good amount, which (can be) cut into big pieces. That ink is the best which is smeared on a plastered fireplace or hearth.

Fourth, the manufacture from puffballs, which are also called *ba mo du gol*. Collect a load of fresh ones and burn them vigorously in fire. (When) they are glowing red, throw them into water. (Then) take them out, grind them in a stone mortar, ascertain that they are dry, and when (the substance) has turned green, pour glue liquid and a *nye shing ma* decoction (into it). By being pressed a long time, it will become very dark black and this black substance should be wettened gradually.

Fifth, if one manufactures (ink) from dung, collect the cow dung *lci-ba-ser-ka-ma*³⁴. It is good if this is the early dung *ser-kha-ma*. Burn it in fire, and when it has become glowing red, throw it into water and take it out (again). Then one mixes in a little bit (*mtheb-skyu*) of fine flour which has been dried, burned and soaked in water. After this, by application of the method (mentioned) above of transforming it inside a mortar, the colour becomes extremely dark, and it should be made into a black fluid.

Sixth, the method of making it out of *ser-sha*³⁵. Use summer *ser-sha* that are easily cut.

Seventh, the ripe fruit of *Ricinus communis* (*tsi dra ka*), when it is fresh, is pierced with a needle, and the juice is accumulated in an iron vessel. If it has become dry, beat it a little bit and soak it in water in an iron vessel. Since the juice becomes dark red by being pressed in the sun, after pouring (into it) the clean juice of *thar-nu*³⁶ and black pigment (*mtshur-nag*) and writing (with that), one gets an ink which is dark red (*mching-kha*), thinly flowing and good to write with.

Eighth, put animal sinew free from blood, nerves and integument and some colouring matter in a smooth clay bowl. To this add whatever of the above-mentioned soot is available and press (it), pouring in a little lukewarm water till you get the right consistency; when writing with it, it is not that easy to write with, but has a nice colour. If one smears it onto clay etc. which has not been heated by fire or sun, it is of good quality (too). Since it congeals if there is too much sinew, you should measure it well.

Ninth, pour in as much soot as you want into grated radish; (then) rubbing it by hand and pouring in a little bit of clear water and by wringing it out, one presently obtains ink, and although it does not have the best colour, it is one which is extremely easy to write with; in the long or short run it will fade. If one needs ink immediately, both this and the one made with sinew are the 'quick inks'. The method of soaking ink: warm it up in an inkpot and pour shellac (into it). When it cools down and some drops of water are added, it does not show up if another person writes (with it). If one writes (with it) oneself, it will flow when one warms up the inkpot and pours in a piece of alum. The method of grinding vermilion is explained below, where the mixing of colours is dealt with.

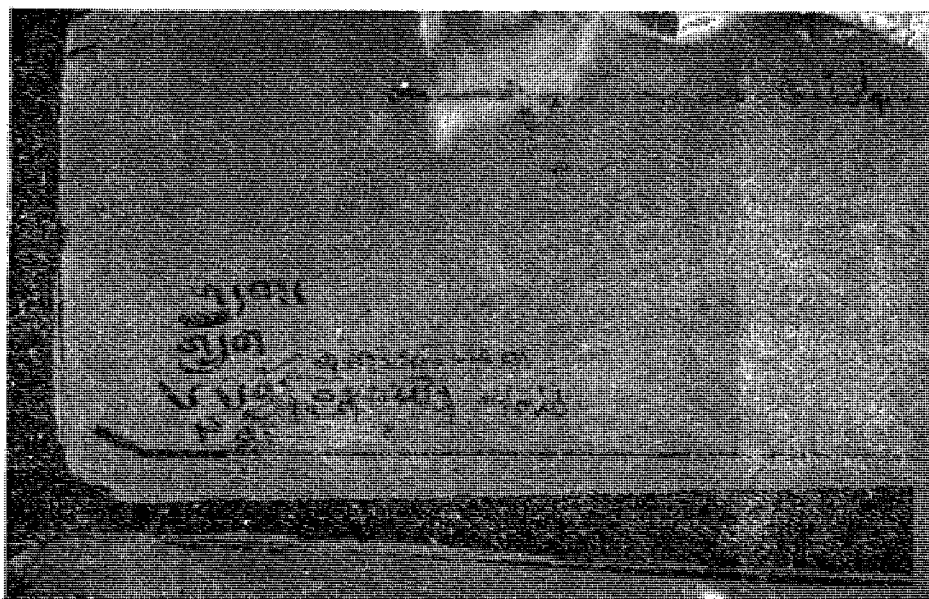
How much one scribe once appreciated well-made ink, which must have been easy to write with, is seen from a manuscript which was microfilmed by the Nepal-German Manuscript Preservation Project in Langtang.³⁷ There, at the end of a chapter, we find written in the margin 'the ink turns out to be good' (see fig.),³⁸ this following some letters, such as *gdrug*, peened with this ink.

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Foot Notes

1. Cf. Gajurel & Vaidya (1984), pp. 162-166.
2. Mi-pham-rgya-mtsho, *Bzo gnas nyer mkho'i za ma tog*, *Collected Writings* (Delhi, 19??), vol. 10 (ka), pp. 71-138 (fol. 1-34. b).
3. A complete list of the contents is given in Jackson & Jackson (1984), pp. 7-8 and in Schuh (1973), pp. 64-66.
4. Jackson & Jackson (1984), p. 84, have already given a translation of a portion of this text. For future studies I wish to give here the text and the translation of the whole chapter, without claiming to have improved on the Jacksons' translation. Many passages remain obscure to me and it is regretted that,



A Margin on the Consistency of Ink

since the work has been done in an extremely short space of time, I could not consult any other edition of this text.

5. also spelled *pha ba dgo dgo*.
6. read : gis.
7. should be bsnur.
8. read : sbang.
9. read : ga pur.
10. read : mi.
11. read. rgya skyegs.
12. read : tsher.
13. read : spyi bzhur.
14. read : bung.
15. read : spyin.
16. read : snyigs.
17. read : las.
18. deleatur.
19. read : rtsi 'thub.
20. see ft 5.
21. read : pags
22. read : bskyur.
23. read : bsnur.
24. read : las.
25. read : 'chad
26. read : 'dzangs.
27. read : brug.
28. read : skoks pa.
29. read : bde.
30. read : 'phral
31. *dpal-'bar* is a torch made of a stick around which is wrapped a piece of oily cloth.
32. The use of the word *lce* (tongue) is not clear to me. It could refer to a tool. That the tongue is used to check whether glue made out of size has congealed and has the right consistency was strongly confirmed by some Tibetan informants, but as strongly denied by others, the reason given being that nobody would want to touch such an ill-smelling hide broth with his tongue.
33. the exact meaning of *rme ba* is not clear to me.
34. BGTC s.v. : *ston dus kyi ri kha'i lci ba 'bud shing legs shos shig*.
35. a yellow fungus.
36. A medical root, used as a purgative.
37. The text belongs to the *Rdo rje phag mo'i zab khrid* cycle and is found on reel, no. L 2.
38. *nag tshva yaq byon*.