On the Manufacture of Ink

-Christoph Cuppers

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-handly 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 scholars 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).

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. The chapter on ink 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 Jigme 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.
bso gnas fer mkho'i za ma tog

[Fol. 2b,6]: sug tsa ba bso ba
[3a,1] la / tsa ma sgron shi'/
gha ga sogs kyi shu pa/
skam por me sbar la khot ma dra/
ba can du me lce don pa' i dreg/
pa'am/ mar me dan dpal 'bar sogs/
yi dreg pa'am/ tham la san/
dreg pha ba sgo sgo'/ skam po/
'shal 'dog gli' g.yog [3a,2] nas/
bereg pa lta bu de dno sryo' o/
de de sryn gyi da shas ma bekol/
un pa gra'n nas chags tshe lces mi/
phug tsam sbyar ba tham rkyal du/
mie berub yar yar byed cin/
lran dan bral na chus bran te/
shas le du gyi byas nas 'dul/
ba'o/ /dir kha cig lha shes thay/
tham [3a,3] rkyal du mie berub/
byas pas gli byas nas dreg pa/
sogs kyi' blgs byguur'/ ba' an byed/
srol yod/ sug tsa de la mie/
berub dus sam/ slad nas kyi
ru'n ste/ pl li'n ka ko la' i chus/
spa'n na dgun mi 'khyag ga bur/
tan ku tsadan dkar po' i chus/
sbya'n pas [3a,4] dbyar ma
rul/ gi rtsis da'n gi wam gi/
chus phab na sOn tu rgyug cin mi/
'chod/ rgyal mo ka ra da' n rgya/
skeg'/ gli chus phab na kha dog
sum/ li'i su ru rta ga pur rgya/
spos spa'n spoa tan ku shu mo za/
sar nag rams kyi chus phab na
 dri bza'n/ yos tshig khu ba da'n/
be khrag [3a,5] gla' kyi' dya'n/
ma blgs na ddu'i od 'chod/12/
spiy ga zur 13 khu bas mthi'n/
dha'n/ skyer shu da'n blgs/
na gser mdog skag khos san/
mdog 'byung phyir ga'n 'od ber/
dam ches pa'i rgyug na/
lar mthun ram tsa la bereg/
thal sun [3a,6] tsam bta/b/
sla na nas sam san ma'i rdog/
po bta' pas de' chu 'thun nas/
gar bar nu/ spiyin me'n da/
gra nas kyi' yos khu'am/ tham

khrag sogs dam du sams can/
rjul pa'i chu ser dva' shas ma/
khrag med pa sogs bares pas/
'od da'n idan shi' dgun 'khyag/
[3b,1] dus phyir 'jib mi 'on/
bra'n yar/ rilan da'n phrad na/
ryken cher mi khyags so/ boul dog ja bskol na'n bta'n/
'tu ba de sug tsa ba'i dam gyi/
mchog go 'zas kyi' bsa d/
gzan yar sug tsa bso ba'i/' rgyu dgu/
yar bsa d do/ /da'n po dreg pa/
las sbyar tshul ni/ /sum nag/
i [3b,2] dreg pa bu'n 14 che bar/
'o'n kyi' 'dul cu'n dkar'/ kyi/
le'i dreg pa 'dul s'a legs/
yar 'od chu'/ shi' dreg legs/
lal bo'n che' o/ /damar chen/
rtse ba'i dreg pa mdog legs bo'n/
che 'dul s'a yar rul rkyen/
de'i phyir dgun dus damar chen/
rtse dreg da'n/ ya'n na sOn/
[3b,3] dreg kyi' le'i dreg pa/
mna'm sbyar byas na mdog legs/
'dul s'a bo'n che ba'i' dgos pa/
yod/ de la mthun ka 'dod na/
ram gyi khu chu nag po da'n spyi/
bsur khu ba/ ano skya 'dod na/
spiy bsur khu ba kho na/ ddu'l/
mdog 'bras dkar da'n ma nu ru/
rtal' khu ba che mna'm ma'n du/
btan [3b,4] ste yan ri'n fi mar/
mna's ba'n 'on/ /damar mna's/
mtshar bar 'od da'n/ /snur/
thag chod khar gtsod khrag/
spa'n ba'i' dya'n ma cu'n zad/
btan na s'me la mi bstan pa' ni/
mar mna's pas 'on/ 'shi tu/ gnnig cin 'od che ba/
'ved da'n la chu cu'n zad bta'n st chu gra'n/
mi blgs [3b,5] par dro dko/
par bra'n pas 'on/ de rams/
gan byed kyi' ma nu ru rtal'/
ku ba bta'n bas 'jam la rme/
ba'i' gnad yod do/ /dam gyi/
spiyin chu'i tshab 'bras khu nag/
gcil gli' byas na 'dren bde skam/
mgyogs bdyar mi rul lo/ /sug/
chu'i da'n ma da'n sbyal 15 chu/
cu'n zad bta'n na 'od che/
Manufacture of Ink

[3b.6] spyr yun riñ du mñaes pa dañ/ mña du skor 'phyog na/ med du byas na ni 'chad pa dren bde la gnag nñaì6 āu/ o dche ba l gnad yod do/ gñaì pa me tog las bzo tshul/ snum gyi mame l rtsen chags pa dreg pa nag po' me tog ni snum dreg dañ 'dra/ me tog gñaì so sor sbañ na nag por gyur ba dañ than cig bere/ de la tshos kha dañ mtshur nag ra khrag cuñ zad bañ nas bris pas/ dañ por snag tsha 'chìa/ kha sla 'dren bde ba zìg 'byurgent/ [4a.1] bris zin nas lo re bźìn gau 'gro/ de ni tsha bul sogs ma bañ bar me tog la byed tshul lo/ /gsum pa sa la7 byed tshul ni/ sa smyag gán po spyn chà gsum/ āib zan chà gcig rnam beres la gong du byug/ skam thag chod pa dañ me la btsn [4a.3] breg bya/ dmar por soñ ba dañ/ der phral gtun khun me thub kyìl nañ du mñaes nas cuñ zad dro bde la he śiñ ma niñ dañs ma cuñ zad dañ/ spyn chu blugs la chu yod na mchog tu bzn/ med na yah ruñ yun riñ mñaes pas mdog nag boñ tshod18 che [4a.4] 'thub19 zal ba thab tshau dañ thab kha la byug pa'14a.4/ 'snag tsha mchog yin no/ /bźì pa phab pa ago sog20 las byed pa ni/ ba mo du golu ñañ zer/ de skyes phral gyl khrues po thus la/ me la btsan breg bya/ dmar tiñ ne ba de chu la bskyur/ de bton nas gtoñ [4a.5] khün du mñaes skam thag chod nas baños la he śiñ ma'íl kha ba dañ spyn chu blugs/ yun riñ mñaes pas mdog nag por che ba 'oñ ste/ 'di nag ro bags21 la byug pa'1 oś yìn no/ lha pa lci ba las bzo na/ ba gñaì gi lci ba ses ka ma bzu/ de [4a.6] yah sañ lci ser kha ma yin na bzn/ de mer bregs dmar por soñ du chu la bskyur nas bton/ de nas āib zan mtheb kyu skam po breg pa chur bgyur22 ba cuñ zad bares te/ gtoñ du bgyur23 tshul goñ ltar byas pas mdog śin tu gnag pa 'oñ [4b.1] ste nag rtsi bya bah1 'os so/ /drug pa ser na l24 byed tshul/ dbyar kha l ser sa chad25 sla ba 'dzañ26/ bdun pa l tsa dra ka'í 'bras bu smin pa de rlon pa yin na khab kyls btsag pa'ì kha bu la lcags snod du bzn/ skam po yin na chol tsam brodu la lcags snod du chur [4b.2] sbañs/ fi me 'dul bas kha bu smug nag 'byuñ bas/ thar nu dañ mtshur nag gi kha ba dañ ma blugs nas bris pas snag tsha mchun kha/ drug27 śìñ he ba/ 'dren bde mo zìg 'byuñ/ brgyad pa ni dud 'gro' rgyuña pa khrag dañ rtsa dañ lkoñ28 med [4b.3] pa cig tshon tsam rdza phor 'jam po' nañ du blug/ de la goñ gi dreg pa rnam gha yod bzn la mña/ chu 'jam tsam blug/ /gar sla ran por byuñ ba dañ bris pas/ 'dren pa de29 mo rañ min pa'ì, mdog legs po gcig 'oñ/ 'di me hi mî phogi pa'ì [4b.4] zal ba sogs lo byug na legs/ rgyuña pa che na kog goñ bas tshod zin par bya'no/ dgu pa la phug bdrar gseb dreg pa gha 'dod cig blugs/ lag pas mñaes la chu gtsan cuñ zad blugs te btsir bas phral du snag tsha 'byuñ ste/ mdog legs pa [4b.5] rañ min yañ 'dren śin tu bde ba gcig 'oñ/ yun riñ na coñ zad yal 'gro' ba yin/ khral30 du snag tsha dgos na 'di dañ rgyuña pa la byed pa gñaì gcig nañs nañ yin no/ /snag tsha sbañ tshul snag bum gyl/ nañ bros la la chu blug/ de nas grañ ba dañ chu thig blug [4b.6] pas gzan gyls bris kyañ mî 'oñ/ rañ gis 'bri na snag buns bros la tsha la'í shug blugs pas 'bab par 'gyur ro/ /mthal 'dul lugs 'og tu tshom shyor skabs su 'chad/
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 torch 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 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, Vateriana wallichii 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 shellac (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 sediments 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 summertime. 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 rye 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 rye shing ma decoction (into it). By being pressed a long time, it will become very dark black and this black substance should be wetten gradually.

Fifth, if one manufactures (ink) from dung, collect the cow dung lci-ba-ser-ka-ma. 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 (mthbe 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. 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* ³⁹ 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 *gdug*, peened with this ink.

**Bibliography**

*BGTD—Bod rgya tshig mdzod chen mo*, Beijing, 1985.


**Foot Notes**

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 \textit{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 : bungs.
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
27. read : brug.
28. read : skoks pa.
29. read : bde.
30. read : 'phral
31. \textit{dpal-} 'bar is a torch made of a stick around which is wrapped a piece of oily cloth.
32. The use of the word \textit{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 \textit{rme ba} is not clear to me.
34. BGTC s.v. : \textit{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 \textit{Rdo rje phag mo'i zab khrig} cycle and is found on reel no. L 2.
38. \textit{nag tshva yaq byon}.