

Supplementary file 1

Thongdok Norbu J., Nimasow Gibji, Nimasow Oyi D. (2021) Ran-thok and Ling-chhom: indigenous grinding stones of Shertukpen tribes of Arunachal Pradesh, India.

Field Observation Notes

Apart from interviews and filling up of questionnaires, the following specific observations were made on people and the villages during the field survey:-

1. The respondents were shy and little bit reluctant to interact in the beginning.
2. Some of the respondents make excuses of not knowing about the grinding stones and some replied that “it has gone missing from my house”.
3. The younger generations were observed to be unaware about the stone tools.
4. The preferences of mechanical mills over traditional grinding stones were observed due to involvement of hard manual labour and time.
5. Very few rotary querns and nutting stones were observed to be in good and operational condition.
6. An interesting observation on nutting stones was made in an abandoned village named Ling-chhom. The nutting stone appears to be discarded and it was covered under the earth surface with little part visible.
7. Ran-thok/ rotary querns were observed in most of the households but some of them are not in use for decades and were found in dilapidated conditions.
8. Some of the villages do not possess the essential raw materials. Hence, they collect the raw materials from the neighbouring villages on mutual understanding.
9. Women in groups were observed performing grinding and pounding activities joyfully in some of the villages.
10. In Rupa village, two women were observed performing cereal pounding in a rhythmic manner. Similarly, a man was also observed performing pounding activity with a woman.
11. The study area is a part of young Himalayan Mountains and mostly consists of uplifted sedimentary and metamorphic rocks. In many places, detached Gneiss rocks of suitable size for making grinding stones were observed during the field survey.

Name of the investigator: Norbu Jamchu Thongdok

Interview with selected villagers scripts

Respondent No.	Village Name	Q. 1. Do you want to continue grinding and pounding activities?	Q. 2. Did you ever tried to make grinding stones?	Q. 3. Does grinding and pounding activities provide opportunities for social interactions?	Q. 4. How you make people understand the importance of stone tools?	Q. 5. What is your opinion on the declining interest of making stone tools?
1	Rupa	Yes, to some extent.	Yes, once, but I realized that it is too delicate and rigorous work.	Yes, it provides us the opportunities of merrymaking and performing folk songs with fellow friends.	By advising people especially younger ones to use traditional stone tools.	Available mechanical tools had overtaken the traditional tools.
2	Birpur	Yes, to meet food requirements and developing interpersonal relationships in traditional ways.	No	It depends on the situation or whom you are performing the activity.	People are so obsessed by modern tools. So, it is a difficult task.	Declining usage of stone tools has devalued the importance of craftspeople.
3	Brokpublang	Yes, to meet food requirements and developing interpersonal relationships in traditional ways.	No	Yes, it provides us the opportunities of merrymaking and performing folk songs with fellow friends.	By advising people especially younger ones to use traditional stone tools.	Declining usage of stone tools has devalued the importance of craftspeople.
4	Chillipam	Yes, it provides opportunities to interact with the villagers.	Yes, once, but it was too tough to learn and execute the ideas.	Yes, it provides us the opportunities of merrymaking and performing folk songs with fellow friends.	By advising people especially younger ones to use traditional stone tools.	Very few hardworking craftspeople are surviving these days.
5	Dikshipam	Yes, to meet food requirements and developing interpersonal relationships in traditional ways.	It is hard and rigorous way of learning, without dedication it is not possible.	Yes, it provides us the opportunities of merrymaking and performing folk songs with fellow friends.	Even I don't know much about grinding stones.	Available mechanical tools had overtaken the traditional tools.
6	Gorbow	No, I don't think so.	I know a little bit and learning it more from the experts.	Yes, it provides us the opportunities of merrymaking and performing folk songs with fellow friends.	By sharing knowledge about the stone tools.	Available mechanical tools had overtaken the traditional tools.
7	Jigaon	Yes, it is good practice to interact in a traditional way.	No	Yes, it provides us the opportunities of merrymaking and performing folk songs with fellow friends.	By sharing knowledge about the stone tools.	Declining usage of stone tools has devalued the importance of craftspeople.

8	Lingbaktang	Yes, to meet food requirements and developing interpersonal relationships in traditional ways	Yes, tried once but failed.	Yes, it provides us the opportunities of merrymaking and performing folk songs with fellow friends.	By advising people especially younger ones to use traditional stone tools.	Available mechanical tools had overtaken the traditional tools.
9	Membachur	Yes, to meet food requirements and developing interpersonal relationships in traditional ways	No	It is always entertaining perform grinding and pounding activities with fellow friends.	By promoting the use of stone tools.	Available mechanical tools had overtaken the traditional tools.
10	Mukhuthing	Yes, to meet food requirements and developing interpersonal relationships in traditional ways	Yes, tried once but failed.	To some extent.	By advising people especially younger ones to use traditional stone tools.	Available mechanical tools had overtaken the traditional tools.
11	Musakshing	Yes, to some extent.	No	It is always entertaining perform grinding and pounding activities with fellow friends.	By advising people especially younger ones to use traditional stone tools.	Very few hardworking craftspeople are surviving these days.
12	Shergaon	Yes, to meet food requirements and developing interpersonal relationships in traditional ways	I tried once but difficult to learn the skills.	Yes, it provides us the opportunities of merrymaking and performing folk songs with fellow friends.	By advising people especially younger ones to use traditional stone tools.	Declining usage of stone tools has devalued the importance of craftspeople.
13	Thongre	Yes, to meet food requirements and developing interpersonal relationships in traditional ways	No	Yes, it provides us the opportunities of merrymaking and performing folk songs with fellow friends.	By advising people especially younger ones to use traditional stone tools.	Available mechanical tools had overtaken the traditional tools.

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Interview with Zyopo (Craftspeople) scripts

Name of Zyopo (Craftspeople)	Village Name	Q. 1. When did you learn making Ran-thok and Ling-chhom?	Q. 2. From where you obtain the tools for making grinding stones or you make it yourself?	Q. 3. Are raw materials different from other makers and how you obtain the raw materials?	Q. 3. Can you explain the step-wise procedure of making Ran-thok and Ling-chhom?	Q. 4. Are you making still making stone tools or stopped it?
1	Thongre	I learnt it at the age of around 14 years. My grandfather was a prolific craftsman who dedicatedly taught me his skills and gradually I became a well known craftsman.	The iron tools are obtained from the plain people of Assam. Since past we had barter trade with them and the commodities like cloths, brass metals, rice and iron petals were obtained in exchange of our spices.	No, the raw materials used in making stone tools are same in all the villages. The raw materials especially stones are obtained from the surroundings and sometimes excavated from the rocks.	1. Suitable stones are searched out and collected. 2. The stones are broken down into desired shape and size using hammers, hoe and chisels. 3. Final step involves shaping, designing, polishing and finishing.	Most of the villagers have stopped using stone tools. So, I stopped making it. Besides, I am too old now and shivering hands does not cop up with thoughts.
2	Gorbow	My father was a well-known manufacturer in our village. He taught me this wonderful skill. So, I inherited my father's skills and continuing it.	As per the folktales narrated by my father, the precious Iron, beads, bangles and golds were traded by the Tibetans and also acquired from the plain people of Assam.	No, the raw materials used in making stone tools are same in all the villages. The raw materials especially stones are obtained from the surroundings and sometimes excavated from the rocks.	1. Suitable stones are searched out and collected. 2. The stones are broken down into desired shape and size using hammers, hoe and chisels. 3. Final step involves shaping, designing, polishing and finishing.	I am becoming older and it is difficult to collect the raw materials at this age. So, gradually I am losing interest of making stone tools.
3	Shergaon	I learned the carving skills from my grandfather, during my young age.	We don't produce or possess raw iron tools. It was obtained by trading with the neighbouring tribes through barter system.	No, the raw materials used in making stone tools are same in all the villages. The raw materials especially stones are obtained from the surroundings and sometimes excavated from the rocks.	1. Suitable stones are searched out and collected. 2. The stones are broken down into desired shape and size using hammers, hoe and chisels. 3. Final step involves shaping, designing, polishing and finishing.	The villagers are not using stone tools anymore. So, what to do by making grinding stones. Besides, I am ageing and can't do hard work.

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Blank version of Questionnaire

1.0 IDENTIFICATION

- (a) District:
- (b) Circle:
- (c) Name of the village:
- (d) Name of the respondent:
- (e) Relationship of respondent with the head of household:
- (f) Age of respondent:
- (g) Educational qualification: Illiterate / Primary / Secondary / Graduate / PG / Professional
- (h) Religion: Hindu / Buddhist / Christian / Others, if any specify
- (i) Tribe / Sub-tribe:
- (j) Clan:
- (k) Total number of family members:
 - (i) Below 14 years
 - (ii) Between 15 – 59
 - (iii) Above 60

2.0 INFORMATION ON GRINDING STONES

2.1 Usage of grinding stones

1. Do you use grinding stones? Yes/ No, if yes, then specify the types:

2. How long you are using the grinding stones? Please explain:

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3. Does every household in the village use the grinding stones? Please explain:

4. Name the cereals/nuts that are ground using rotary querns/nutting stone.

5. Who performs the grinding activity? Male/Female/Both

2.2 Manufacturers and manufacturing process

1. Do you manufacture the grinding stones yourself? Yes/ No

2. Are there specific professional group that makes grinding stones? Please explain:

3. Which stone is/are used for manufacturing the grinding stones? Please explain:

4. From where the stone and other raw materials obtained? Please explain:

5. Are there differences in raw materials used between the villages? Please explain:

6. What are the tools/equipments used for making grinding stones? Please explain:

7. Name the materials used in indigenous tools/equipments.

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8. Could you please explain the stepwise procedure of making grinding stones?

9. Which step is the most time consuming and laborious? Please explain:

10. How long it takes to make a rotary quern (*Ran-thok*)? Please explain:

11. How long it takes to make a nutting stone (*Ling-chhom*)? Please explain:

12. What are the mean sizes of the finished products (*Ran-thok* and *Ling-chhom*)?

13. Are there differences in the mean size of the grinding stones between the villages?

14. Are these grinding stones sold or traded?

15. Do the manufacturing skills are inherited from generation to generation?

2.3 Parts and function of *Ran-thok* and *Ling-chhom*

1. What are the different parts of *Ran-thok* (rotary quern)?

2. What are the materials used for different parts of *Ran-thok*?

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3. What are the shape and sizes of different parts of *Ran-thok*?
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4. Whether men/women/both operates the *Ran-thok*?
-
5. What are the gestures of performing activity in *Ran-thok*?
-
6. What are the types of *Ling-chhom* (nutting stone)?
-
7. What are the different parts of *Ling-chhom*?
-
8. What are the materials used for different parts of *Ling-chhom*?
-
9. What are the shape, length, width and height of the *Ling-chhom*?
-
10. Whether men/women/both operates the *Ling-chhom*?
-
11. What are the gestures of performing activity in *Ling-chhom*?
-
12. Which plant species are used for making the wooden nutting tool?
-

13. Which grains and nuts are pounded using *Ling-chhom*?

2.4 Other information

1. Is the use of grinding stones specific to your village or tribe?

2. Whether the grinding practices are still prevalent in your village?

3. What are the reasons for declining usage rate of stone tools these days in the society?

4. Is the grinding stone tools linked to your culture and tradition?

Thank you very much for your kind cooperation and patience.



Investigator: **Norbu Jamchu Thongdok**
Designation: **Research Scholar**

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