

# TRIANGULAR DIAGRAMS

— Prem Ballav Pandey<sup>1</sup>

## INTRODUCTION :

It is clear to all geographers that diagrams are very useful in their different studies. We use many types diagrams; like Bar, Block, Circular etc. but we do not use triangular to show different statistical data's.

In cartography, triangular diagrams, however, are not unknown but all of them so far have been drawn as symmetrical triangle show percentages

Soil scientists use triangular diagrams to show the texture of different types of soil. They show the percentages of clay, silt and sand on three different axes of triangle respectively. All three axes are scaled for hundred percent each and triangle becomes symmetrical.

Not only soil scientists but experts of the other fields also have used triangle to percentages of one selected element.

"In his analysis of hill slopes, A.F. Pitty used among other devices, a triangular graph. Having divided a slope in to three portions (summit, base and mid slope) he analysed the frequency of occurrence of each slope angle observation in each of these categories and calculated percentage of the total observations falling in each slope angle class."<sup>2</sup> Then he takes percentages of different slope angles and shows on three different axes of a triangle. In this way, it also became a symmetrical triangle.

Triangular graphs are used where three variables in the composition of population require analyses. They are useful, for example in the depiction of the young, the middle aged and the old in population. The percentage of the young is plotted along one axis of the triangular graph, of the middle aged along another axis and of the old along the third axis. Because the component values all added up to 100 percent, all three values may be plotted on the graph by a single point. The position of this point within the triangle gives an immediate indication of three fold age structure of the population."<sup>3</sup>

"The percentage of working population in agriculture, manufacturing and services can also be illustrated by a triangular graphs. J.O.M. Broek and J.W. Webb illustrate patterns of livelihood variations from the one country to another in these employment categories by using a triangular graph. The countries then be grouped according to their location within the triangle."<sup>4</sup>

But according to present method of construction, one can show three different variables on a single triangle, of course, these three variables should have some type of correlation with each other, so that when different triangles for different places will be constructed then the comparative picture of different places will clearly come out.

## ILLUSTRATION :

### Method of Construction

Take any three related variables, like number of school, number of students and number of teachers or area of paddy production, production of paddy and population.

<sup>1</sup> Lecturer of Geography in P.N. Campus, Pokhara

<sup>2</sup> F.J. Monkhouse and H.R. Robinson, 'Maps and Diagrams', Richard Clay Ltd., Great Britain, Page 163, 164

<sup>3</sup> Ibi-dem, Page 380, 381

<sup>4</sup> Ibi-dem, Page 382

Find out the length of three different axes of triangle for three different variables on three different suitable scales.

A variable must be taken on same scale for different triangles if many triangles have to be constructed different places for comparison. In this way, although the scales of three different variables are different but for one variables the scale will be same for the different triangle of different places, therefore comparison can be done.

While taking the scales, one should be careful, because if one takes such scales, so that the lengths of different limbs of the triangle may become so small that they may not form a triangle, while plotting.

Now, after taking suitable scales and calculating the lengths, take one variables as the base of triangle and to other (more related variables) as limbs. Make according the length the base of the triangle and the length of two variables on a compass respectively and taking two left and right points of the base find out the upper point of the triangle and then simply, by using the scale construct the triangle.

In this way, construct the as many triangles as there are places have been taken and so each triangle by different symbols. Now for comparison the triangle will be ready.

Example;

Diagram No. 1

No. of primary schools, teachers and student enrolled in eastern and western development regions:

Regions	No. of primary Schools	No. of Pr. Sc. Teachers	No. of Students enrolled in Pr. Sc.
Eastern D. R.	4040	17507	708130
Western D.R.	4647	19103	739337

For diagram No. 1, The scale has been for both triangle are as follows:

- 1 cm. = 1 lakh students.
- 1 cm = 2 thousand teachers
- 1 cm = 1 thousand Pr. schools

According to scales the lengths of three axes of two triangles are following:

Elements or variable	Eastern D.R.	Western D.R.
No. of Students	7.08 cm's or 7.1 cm's	7.39 cm's or 7.4 cm's
No. of Teachers	8.75 cm's or 8.7 cm's	9.55 cm's or 9.5 cm's
No. of Schools	4.04 cm's or 4.0 cm's	4.64 cm's or 4.6 cm's

The base of triangle is the number of primary school, left limb is showing the number of students, enrolled in primary school and right limb is showing number of primary school teachers.

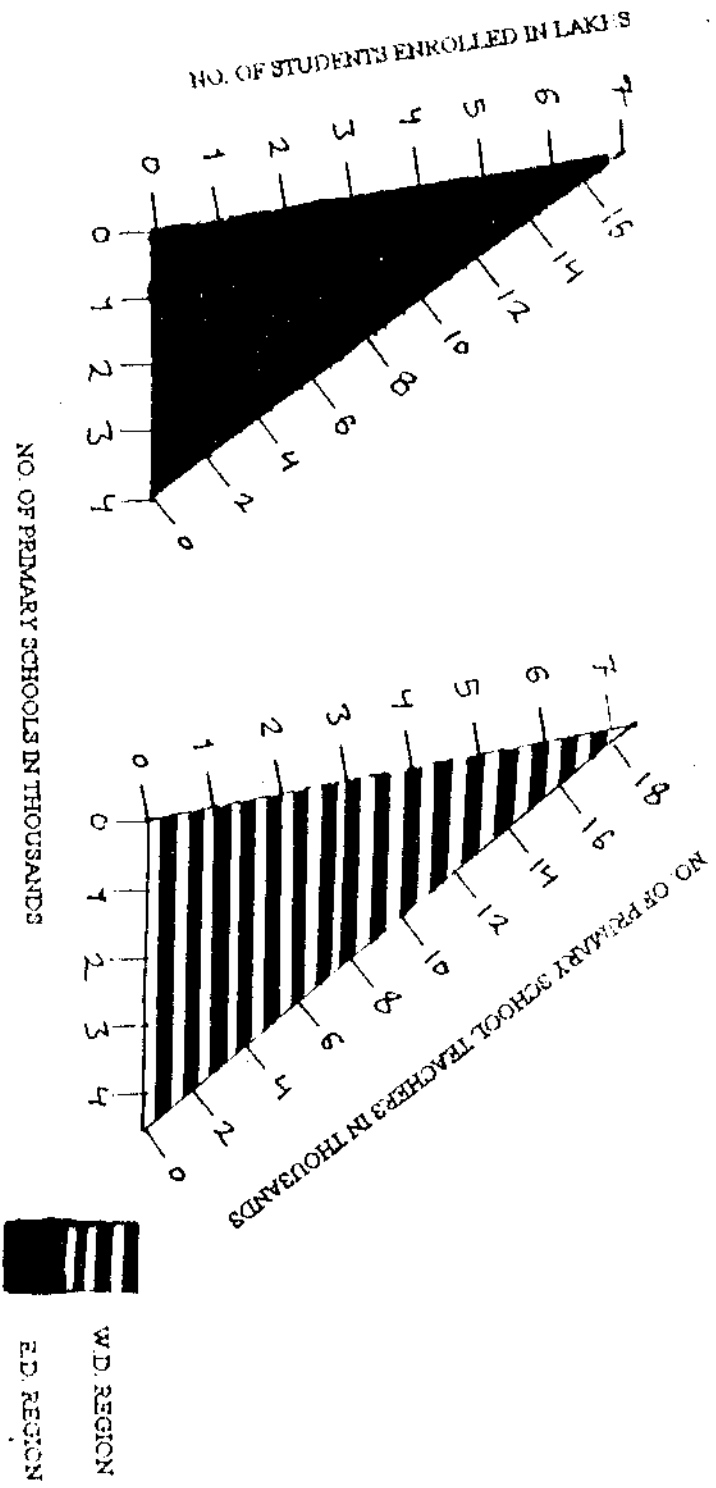
According to the calculate lengths, first the base has been drawn as 4.0 and 4.6 came for eastern and western development regions respectively.

Then taking the length of 7.1 for number of students for eastern development region on compass and taking the left pint of the base place the middle of compass and drawn a little circular line for triangle's upper point then taking the length of 8.7 cm for school teachers on compass and selecting the right point of the base og the triangle for eastern development region, another little circular line, cutting the little circular line of students number, has been drawn.

In this way, where the two little circular line cut each other, that point has become the upper point of the triangle and has been joined by the left and right points of the base.

# NO.1 TRIANGULAR DIAGRAM

NO. OF PRIMARY SCHOOLS, TEACHERS AND STUDENTS OF EASTERN  
AND WESTERN DEVELOPMENT REGIONS IN 1991-1992



Finally, the triangle for eastern development region has been constructed and has been shown by a sample.

Similarly another triangle also has been constructed for western development region.

#### Diagram No. 2

For diagram No. 2 similar method has been adopted. Because the triangle of Kaski district is very small then Morang's, it has been drawn inside of the Morang's triangle; so that the comparison will be more clear. The base of both triangles, in this cause is same but short for Kaski and zero point of base and left limb is also same.

The table scales and length calculated are given below.

Population area of paddy cultivation and production of paddy in Morang and Kaski district of 1991-1992.

Districts	Population	Area of paddy in Hectares	Production in m. tones
Morang	674823	80180	194890
Kaski	292945	17300	38630

#### Scales:

1 cm = 1 lakh population

1 cm = Area ten thousand heaters

1 cm = Production Twenty thousand M. Tones

Lengths according to scales.

Districts	For population	For Area	For Production
Morang	6.7 cm	8 cm	9.7 cm
Kaski	2.9 cm	1.7 cm	1.9 cm

Now, the triangles has been constructed according to the method, adopted for first diagram, in this case, Kaski's triangle, inside of Morang's.

#### Merits of Triangular Diagram:

1. Three inter related variables can be shown on a single triangle and by seeing the triangle of different places comparative picture will be come clear.
2. By seeing the values on scales comparative picture also will be more clear. On no 1, in case of eastern development region 7 lakh students have less then 18 thousand teacher. Although the difference between two region is very little. If the difference was great than it was shown different more clearly. Far diagram No 2 the length of base is more than the length of right or left side of triangle of Kaski district but In case of Morang district the length of base is less then left and right limbs of the triangle. The base is showing the population, therefore Kaski district has less per capita production and less area per person then Morang.
3. The slope of limbs (or sides) of triangles vary. On triangle that limb which has less slope will tell the higher value of that variables which has been shown by that limb.

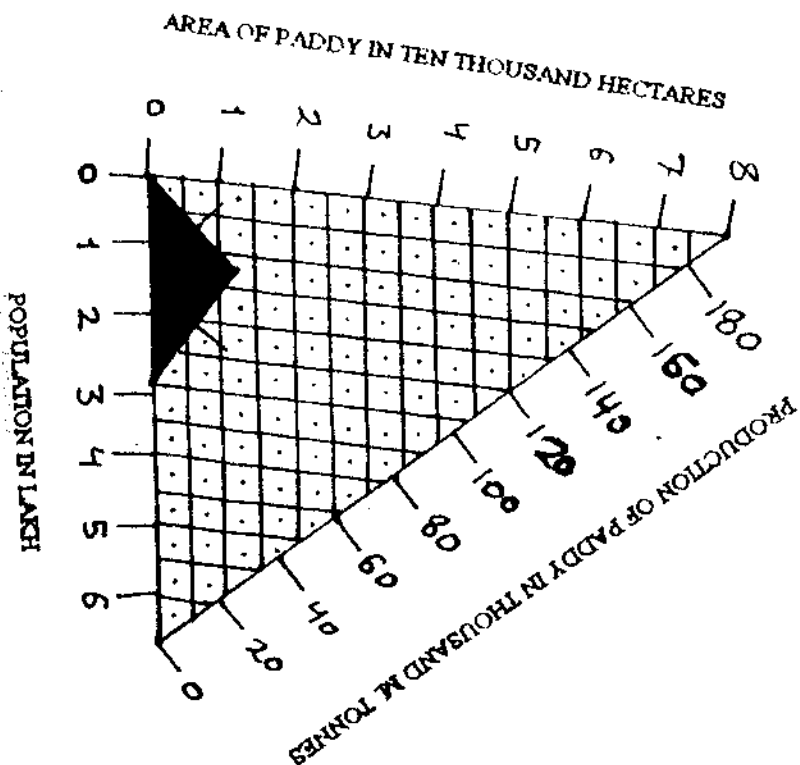
In case of triangle No. 2 two limbs of Kaski district has very little difference but of Morang district the limbs showings the production has more slope then that limb which is showing the area. Therefore Morang district has higher per unit area production then Kaski.

Although, if the value of variables shown by base becomes more then the slope of one limb will increase and another limb's slope will decrease. but when we compare the triangle constructed for dates of similar year than it's effete is not necessary to consider.

NO. 2

TRIANGULAR DIAGRAM

POPULATION, AREA AND PRODUCTION OF PADDY OF MORANG AND KASKI DISTRICTS OF NEPAL IN 1991-1992



MORANG  
KASKI

### Conclusion :

It may be concluded that the triangle also may be used to show the different statistical data diagrammatically. For the comparison between places diagrammatically triangles are more appropriate, because three variables can be compared at one time. By this diagram planner may convince people that which place should have priority than another in which sector of development. For example, by diagram No 1 it is clear that the load of teacher is more for eastern development region than western because per teacher the number of students is more in eastern development region.

By diagram No. 2 it is clear that production per unit area is less in Kaski district than Morang therefore it demands some careful investigation. Is only the fertility of soils is responsible for this ? or is less temperature of Kaski district only responsible for this ? There may be the some other reason.

Another point also emerges that although the population of Morang is higher than Kaski but at least for the production of paddy is in better situation than Kaski.