

not be at random with respect to all terrain attributes examined, with the exception of aspect. There appears to be a discernible pattern in the terrain attributes of SG locations: they are characterized by low altitude, low slope, concave plan curvature and concave profile curvature. SGs are found proximal to historical settlements that were, in turn, located in the lower reaches of the region. The low slope, concave plan curvature and concave profile curvature of SG locations ensure that the old forest vegetation cover characteristic of SGs can encourage percolation of water in land parcels that result in low velocity, convergence and deceleration of flow. This observation hints at a conscious effort in the delineation of SGs with respect to terrain attributes of the land they occupy. However, the aspect of SG land parcels appears to follow no discernible pattern. While SGs attached to ancestral homes that are built based on traditional architectural treatises face north, east or northeast, those that house folk deities are found to be distributed equally with respect to compass directions. It is recommended that the terrain attributes of SGs in the country as well as the globe be investigated with respect to regional ecological planning objectives and a local focus.

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Similarity in Ph D thesis in state universities is less than 10%

Plagiarism is the most common form of academic dishonesty which includes, exploiting works or ideas of others without citation and acknowledgement. The common types of plagiarism are direct, self and accidental plagiarism¹. Good scientific measures in research ethics can control these fraudulent practices. There are software-based services such as URKUND, Turnitin, Plagtracker, etc. available for detecting plagiarism in manuscripts². These tools are designed to support students and researchers to self-analyse the percentage of similarity,

thereby alerting possibilities of plagiarism. Such software, if enforced, can drastically bring down cases of major plagiarism. However, there are no scientifically derived measures of normal level of overlap with other sources, to the best of our knowledge. Institutions or organizations which prescribe permissible limits, do not have any rationale for their choice. Most world class Universities or Institutes (Harvard, Cambridge, IIT Delhi, IISc, etc.) recommend ways of avoiding plagiarism rather than prescribe limits of overlap with other sources^{3–5}.

There is increasing focus on management of plagiarism in scholarly works in higher education institutions all over India. However, no major scientific study of existing patterns of similarity in scholarly writing has been reported. This communication reports an attempt in this direction based on 487 thesis from Shodhganga INFLIBNET website. We present the existing levels of overlap with other sources in Ph D thesis, from a state university, University of Kerala, based on the Ph D thesis uploaded from this University in Shodhganga INFLIBNET

SCIENTIFIC CORRESPONDENCE

Table 1. List of thesis under Kerala University published in Shodhganga up to 1 June 2016

Stream and subjects	
Science and Technology (310 theses)	
Physics (150), Mathematics (45), Chemistry (22), Civil Engineering (15), Statistics (13), Biochemistry (11), Mechanical Engineering (9), Botany (5), Zoology (5), Food and Nutrition (5), Aquatic Biology and Fisheries (4), Home Science (4), Optoelectronics (4), Future Studies (3), Bio-technology (3), Electrical Engineering (3), Electronics and Communication Engineering (2), Agriculture (1), Geology (1), Geography (1), Demography (1), Bio-Informatics (1), Environmental Science (1), Computer Science (1)	
Social Science (77 theses)	
History (12), Commerce (11), Economics (10), Sociology (8), Education (8), Political Science (7), Physical Education (6), Psychology (6), Management Studies (5), Tourism (2), Islamic Studies (2)	
Arts and Humanities	
Malayalam (28), Library and Information Science (21), Philosophy (12), Linguistics (11), English (6), Tamil (5), Law (4), Hindi (4), Sanskrit (3), Music (2), German (1), Communication and Journalism (1)	

Table 2. Mean and standard deviation of observed percentage of similarity in Ph D thesis from University of Kerala in Sodhganga site

Stream	Number of thesis	Mean value of plagiarism	Standard deviation
Science and Technology	293	2.92	6.66
Social Studies	70	4.03	5.18
Arts and Humanities	79	1.77	3.65

Table 3. Trimmed mean and standard deviation of observed percentage of similarity in Ph D thesis from University of Kerala in Sodhganga site

Stream	Number of thesis	Mean value of plagiarism	Standard deviation
Science and Technology	278	1.86	2.24
Social Studies	65	2.94	2.86
Arts and Humanities	73	1.86	2.24

website. The statistics we report will be useful in rationalizing any prescribed limits of overlap with other sources.

The dataset for the study was collected from Sodhganga INFLIBNET site, excluding the reference section (as it is unavoidably repeated across studies). As the number of thesis uploaded was small, no sampling was attempted and the study was carried out on all 485 theses. The theses were grouped into three streams: (i) Science and Technology, (ii) Social Science and (iii) Arts and Humanities. The detailed list of dataset is given in Table 1.

The software recommended by UGC-URKUND was used to measure percentage of similarity. All results were

analysed. Hits against the INFLIBNET website were discounted and the percentage of similarity reported was tabulated. Both raw mean, trimmed mean and standard deviation of the observed percentage similarity with other sources were calculated stream wise. Tables 2 and 3 show the mean and standard deviation obtained without and with trimming of the outliers. Trimming was used to exclude a handful of cases with skewed extremes.

Mean value plus one standard deviation ($x + \sigma$) of similarity with other sources was less than 10% in the case of all streams with and without trimming of the mean. Therefore any overall percentage of similarity with other sources

which is below 10% in any stream may be considered as normal by existing practice. Any overlap above 10% is a fit case for investigation of plagiarism. It may be noted that theses in non-English languages like Malayalam, German, Hindi, etc. are not accepted for checking by URKUND. We hope that similar studies on an all-India basis will be taken up by interested readers.

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