

Under Graduate Education Program in GIS Integrated Military History

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Abstract

It would not be simple and informal to combine into a programme for under-graduate education both a strong grasp of what can be done with available GIS software and an understanding of what the future will likely bring to the discipline. This paper discusses academic programme in *Geographic Information System (GIS) Integrated Military History* for its under-graduation course in Military History. In addition to the discussion of the rationale and design of the programme, this paper illustrates through a description of the present introductory graduate course “*Geographic Information Systems in Historical Studies of War*” which is involved in education. The under-graduate programme of this magnitude would be the first of its kind probably in the world and in India as well. During the Fourth Semester, all Army cadets will be given an introduction to the use of GIS in Historical Studies (GIS History and Historical GIS). In Fifth Semester, call Army cadets will be taught GIS-Integrated Military History Topics. In Sixth Semester, all Army cadets take a lab-based course, entitled simply “Presentation of Military History Projects”. We will also try from the beginning to build among them a spirit of collaboration and team work in their activities in the laboratories.

KEYWORDS: Applied History; Geo-reference; *Geographic Information System*; Military History; War.

Introduction: This paper discusses academic program in *Geographic Information System (GIS) Integrated Military History* for its under-graduation course in Military History. This program would be based on the use of *Geographic Information Systems (GIS)* and related information technologies to create geo-visualization of the battlefield of the past for better understanding of future battlefield and preparing military aim with battle pal to achieve surprise over our strategic enemies. In addition, to discuss the rationale and design of the program, this paper illustrates through a description of the present introductory graduate course “*Geographic Information Systems in Historical Studies of War*” what is involved in education.

We would like to present our interest in the form of present paper in developing a new type of historical research in the field of *Geographic Information System (GIS) Integrated Military History* to teach students of Defense Studies in general and future officers of Armed Forces in particular. In general terms, in order to understand the past, particularly military campaigns of past, we must be able to

integrate information about the natural, social, and cultural environments, to deal with complex scientific Military History, and to write and teach “*connected histories*”. To achieve this integration of all possible historical information on the basis of place (for example, original/primary information/written documents and photographs; digital text, image, and tabular data) will demand be required as historical geo-reference, their information to both place name and the geographic coordinates of longitude and latitude. If the product is digital in nature, the resulting database will constitute body of knowledge that will remain open to the future input of additional information and the correction of errors, if there is any. It is also important to discuss that how the History Department of NDA seeks to prepare graduate cadets to undertake GIS-Integrated Military History so that they (Cadets) will have a broad range of interesting knowledge base once they complete the degree programme. This programme is being designed and projected to introduce to enhance significantly the opportunities for cadets with strong, traditional disciplinary training by introducing them to the unrivaled means of Geographic Information Systems (GIS) and related information technologies to explore, analyze, and visualize historical resources, the interactions among them, and their relationship in space and time; to catalogue, connect, and distribute historical resources on local and global scales; to formulate questions for analysis of spatial conditions; to learn from the past mistakes; and finally and most importantly prepare their battle field in future for conventional war or CI Operations.

In discussing this under-graduate programme, we present only our own views and not those of our colleagues who might have other perspectives on graduate education in this type of transformative historical research and teaching. Despite this disclaimer, we hereby stress that this ambitious teaching programme could only be undertaken because we have recognized the degree to which the humanities are under attack at NDA and many institutions of higher learning in India. In the midst of some unexpected institutional crises, existing history departments may disappear as the remaining history courses will be closed due to introduction of new programme as per requirement of the market. We on behalf of my department decided to shape its own future rather than waiting to react from a position of weakness. We could take advantage of our unusual regiment of historians interested in GIS-Integrated Military History and the flexibility we have because of our small size to reshape ourselves in ways that would attract favorable attention and additional resources and support from the Geography Department, which is equipped with advance GIS Laboratory. To achieve the goal, we have decided to work to occupy a niche to develop Under-graduate GIS-Integrated Military History with the use of available GIS and related information technologies.

The use of GIS- Integrated Military History may be explained through little amplification of the following aspect: (a) GIS History and Historical GIS, and (b) GIS-Integrated Military History.

We deliberately used the term “GIS-Integrated Military History” because we wish to stress that our efforts to transform history and the historical social sciences go well beyond what current GIS software may deliver. If we want to teach history in a way that integrates information on the basis of geographic location and connects these locations through a variety of interactive networks, we cannot constrain ourselves by an exclusive reliance on current GIS’s layer-based data model, its weakness in visualizing attributes or themes, and its inability to deal adequately with time. Instead, we need to follow a vision that encompasses both what current GIS software can do and the elaboration of ways to meet our other needs. The effective education of under-graduate cadets must do both things at the same time.

Teething Pains: History Department is able to start our first Under-graduate programme in GIS-Integrated Military History. The nature of its core courses may undergo some changes for two reasons - our under-graduate programme of this magnitude would be the first of its kind probably in the world. Not surprisingly, this idealized initiative may need to be trimmed a bit to the reality of educating our cadets; and, we required a new departmental line, collaborative efforts with the Geography Department, in order to start the under-graduate programme after its approval by the NDA Authorities and the affiliating University (JNU). We also predict that this new under-graduate programme would require additional funding which basically to depute our present CAOs of the department to undergo necessary basic course in GIS designed by the Government Organizations of Repute.

We hereby would like to propose multi-disciplinary research project (Collaborative Research Program) to accomplish task to prepare exemplary teaching and study material. We further argue that this project, in part through the development of an under-graduate program in GIS-Integrated Military History, would transform teaching, learning and research in the HISTORICAL SOCIAL SCIENCES and GEOGRAPHIC INFORMATION SCIENCE as well.

Under-Graduate Program Design: To get success in achieving our aim to produce well equipped, educated and transformed graduated, we would require faculty with sufficient understanding of the use of primary sources and of the major contemporary secondary historical literature, and well prepared for collaborative work. So, we wish to develop a curriculum that focused directly on relation between History and Geography, importance of Geography for Military Leader, GIS- Integrated Battle Visualization, project work to learn application of technology to win surprise in the battle field to include visual communication and oral communication skills to express views to elaborate aim and objective of particular battle. Because history as a discipline has customarily and traditionally stressed individual work, it made sense that our cadets would not know how to function in a collaborative physical or virtual environment. As a rule, historians know nothing about the norms of collaborative research (and

publication), which are common in other disciplines, and collaborative forms of teaching and learning will start in History/Geography classrooms/laboratories.

Therefore, the new GIS-Integrated Military History programme, department will work as the keystone of our under-graduate programme within a collaborative environment that will allow us to “train” our cadets in ways they can interact more effectively with their counterparts. We are convinced that our graduates will stand out among other officers of Armed Forces.

In addition to its benefits for the cadets, we believe that some of these internships will link us to higher institutions of Armed Forces to promote the GIS-Integrated Military History. Other officers may also involve and participate in multidisciplinary, collaborative research projects that the History Department will develop as a result of our research emphasis on large-scale, GIS-Integrated Military Historical Studies.

To make sure that graduates from NDA are prepared for evaluating the spatial conditions of their battlefield to achieve their goal with zero error. It may be noted that compared to the offerings of other History Departments of any University of India and many in the World, our ug-programme would be unusual and different with this new course programme. During the fourth Semester, all Army cadets will be given an introduction to the use of GIS in Historical Studies (GIS History and Historical GIS). In fifth Semester, all Army cadets will be taught GIS-Integrated Military History Topics. In sixth Semester, all Army cadets take a lab-based course, entitled simply “*Presentation of Military History Projects*”. Here, activities and discussions would be focused in ways that encourage the cadets to think themselves as a collaborative unit or team responsible for promoting the learning of all of its members (other cadets of Group).

Because we want our graduates to have strong traditional training, along with minimum of four/six semester credits in GIS-Integrated Military History courses beyond the core courses in History and Geography. Since NDA is not responsible to prepare Human Resources for out-side market, effective application of GIS requires substantial disciplinary knowledge, this powerful information technology would be optimally utilized to ask new questions about the past and present their arguments striking ways, provide the answers, and this will still be the case when we expand the organizational and analytical tools available for GIS-Integrated Military History.

During the courses we will be providing opportunities to understand cartographic representations of spatial features and its relationships with events of historical developments; regions as historical entities, including change in their spatial dimensions and characteristics over time; how places are connected and how these interconnections have changed over particular periods; and how local developments are linked to regional or global themes.

Importance: We wish to develop and impart present programme to NDA cadets along with GIS trained faculty of the Geography Department and also wish to start programme soon after establishment of GIS laboratory at NDA. It would be one step forward in converting History subject into '*Applied History*' subject. Geo-referenced information can be used in ways that compensate for cadets' weak thinking capacity to grasp spatial relationships, and we greatly enhance the investigation and teaching about historical questions such as the pre-war spatial environment, social, and cultural impressions of human shifting and re-settlement of the local population after war. It would be difficult to organize and understand the available information particularly geo-referencing, and in order to manage, integrate, and analyze data, we will integrate GIS and related information technologies to answer relevant questions.

A lack of basic knowledge about GIS still hurts our ability to build the undergraduate programme. Those managing everything from manmade to natural disaster response and war and post war complexities, will be benefitted in and its application in resolving various issues harmoniously. If we are allowed to oversimplifying a bit, "*GIS permits us to treat each data type as a separate layer, which can, on the computer screen, overlay other data layers to see relationships among them. When their information is organized in this form, historians find it much easier to recombine and disaggregate data, to display selected features, and to explore what is known in ways that expose unexpected relationships and facilitate analysis of complex problems*". (JB Owens, Spring 2010) It may be further emphasized, the Military History of any period can be adequately understood without taking into account how that place has been connected to other places, and GIS facilitates linking and comparing places within different spatial scales. Particularly when a war theater is a long border of a country or large region, it is very difficult for a single historian to master what is known about multiple locations, and GIS provides an excellent platform for multi-disciplinary collaboration among researchers. GIS permits, it is highlighted that "*visualization of relationships. Visualization reduces the cognitive weight on even the experienced analyst when the quantity of information is great, a problem is complex, and alternative solutions are numerous and surpass the capabilities of human reason. The visualizations employed for data exploration and analysis can often be transformed into striking supports for teaching and public presentations. Particularly when founded on some form of cartographic representation, visualization draws cadets and those who attend important meetings to prepare for war/battle/CI Ops or lectures more quickly into discussion and analysis, better supports their memory of significant details, and more rapidly increases their thinking performance than consideration of the same issues without the use of visualization*". (Michael Goodchild, 2004)

Teaching GIS-Integrated Military History: It would not be simple and informal to combine into a programme for under-graduate education both a strong grasp of what can be done with available GIS software and an understanding of what the future will likely bring to the discipline. Because it is intended as the IV semester,

introductory course for GIS-Integrated Military History, we would call the course “Geographic Information Systems for Historical Studies”, which will provide background and establish its relation between GIS and Military History and would also provide as broad a perspective as possible. Fifth semester cadets would study GIS-Integrated Military History. We will also try from the beginning to build among them a spirit of collaboration and team work in their activities in the laboratories. In order to focus cadets’ attention on the diverse topics presented in History, a semester project would be assigned based on a set of assumptions to sixth Semester Cadets. The project must encourage cadets’ collaboration, permit application of available GIS capabilities, and force both the development of significant spatial questions that are also historical and thinking about what GIS-Integrated Military History might become.

At the end of the semester, cadets will present their projects orally, visually, and in writing. During evaluation, we will take into account both written project and oral “Power Point” presentation during the last cycle of the sixth semester. The projects would be designed to address the shortage of spatial questions in the discipline of Military History. These projects will help cadets in investigation the problems. Following would be judged to evaluate Cadets:

- 1) Description, location, languages, types of data in archival or other sources (e.g., maps) available to carry out project. [Note: need to attach a list of the works from which cadets derived this information.]
- 2) Definition of important historical questions that can be answered on the basis of the data cadets describe (with high marks for really good spatial questions that are related to Military History) and differentiation of the value of these questions in reference to the projects about which cadets have read for this course. [Note: remember that it is suggested that these questions must be put forward in some sort of order, probably by importance.]
- 3) Explanation of how GIS would be used to organize, explore (query), and analyze the available data.
- 4) Explanation of the types of cartographic visualization cadets would employ and the differentiation of their choices from those made in the projects about which cadets have read for the course.
- 5) Explanation about the project, if cadets could generate the necessary data and carry it out, might tell us about the major transformation of the world system.

Because for every alternate cycle of the semester, cadets prepare short papers, and sometimes Power Point presentations about what cadets have learnt.

Conclusion: It is worth stressing that our programme will place an emphasis on visualization. Visualization is a primary focus of our core under-graduate courses.

It is an important component of the professional communication skills we want all of our graduates to demonstrate. In terms of increasing our understanding of historical reality, we will use visualization to reduce the cognitive weight when the alternatives are numerous and surpass the capabilities of human reason. However, it is also recognized that the creation of effective visualizations for the comprehension and communication of the spatial-temporal form of the topics and its processes is fundamental for the implantation of this type of research and teaching within the disciplines of history and the historical social sciences.

There would be two major sources of historians' frustration with using GIS: (1) the difficulty of handling time, and (2) the requirement of precise or crisp data when so much historical information is riddled with vagueness and uncertainty in absence of primary sources. In an introductory under-graduate programme, it is important to encourage the cadets to think about how such problems might be handled in the future. The nature of the cadets' projects invites constant discussion in and out of class of these issues and brings to the fore the importance of multi-disciplinary collaboration.

Those of us interested in the use of GIS for historical research and teaching – and at the under-graduate level the two matters are inseparable—we will transform our discipline. According to my understanding traditional narrative is linear and poor at capturing the complex, multi-dimensional, nonlinear nature of reality. Cartographic visualization is weak on presenting the multiple themes or attributes that are necessary to enhance our understanding of reality, and it poorly convey anything relating to time. We assume the emergence of forms of GIS-Integrated Military History that provide us with thematic richness, complexity, multi-dimensional analysis, and even vague logic and simulation. In a challenging and constantly changing technological and environment, the History Department with the support of the Geography Department, desires our cadets to be prepared to perform their job with zero error.

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