The historiography of landscape research on Crete

Gkiasta, M.

4. Analytical Approaches towards the Study of intra-Tradition Variability and inter-Tradition Comparisons.

KEY:
CH = Culture History, HG = Human Geography, LT = Landscape Tradition, TT = Topographic Tradition, PH = Prehistoric, GR = Greco-Roman, BVT = Byzantine, Venetian, Turkish

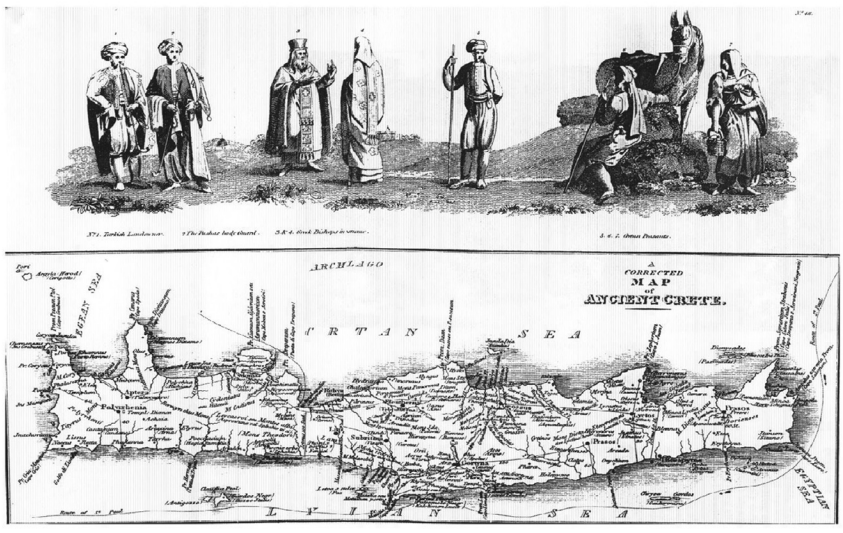
4.1 Spatial and Temporal spread of Landscape Projects

This section presents the areas of Crete that different archaeological landscape projects explored over time and allows us to visualise the spatial and temporal spread of archaeological landscape research on the island. Pictures linked to the various projects on figures 4.1.1 – 4.1.5 present samples of maps published by the relevant projects and aim to enhance understanding of their conceptual framework, evident in themes and means of presentation.

4.1.1 Travellers Tradition

The Travellers have traditionally explored the whole island (or the biggest part of it) and tried to present a picture of Crete as a new undiscovered geographical and cultural world. They present maps of ancient Crete based on previous and their own researches but also art paintings of monuments and everyday life themes.

TRAVELLERS



survey id: Sieber

Fig. 4.1.1 Typical presentation themes in Travellers' books.

4.1.2 Culture History Tradition

CH has been the leading paradigm of archaeological landscape research on the island and includes many more researches that could not have been included in the current study. Central and in particular eastern Crete, have

attracted most attention from the very beginnings of archaeology, but over time interest expanded towards the discovery of the archaeological past throughout the island. The purpose of finding new sites is quite obvious in the maps presented, where sites/dots are shown in a 2-dimensional space, occasionally in relation to basic contours and routes. It is quite interesting that as time went by, research interests tend to focus on smaller areas and thus, densities increase. It is of course a norm that research areas overlap and that the same area may be explored in various resolutions even by the same researcher. A more general study of a large area and the presentation of a site index may be followed by a more detailed study of fewer sites in smaller areas.

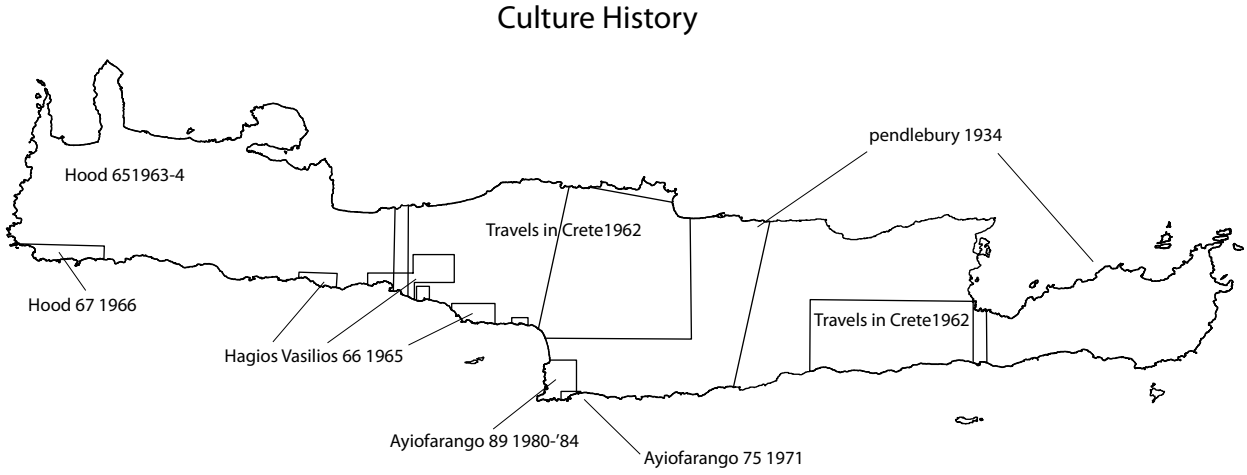


Fig. 4.1.2 Areas covered by CH projects over time and across the island.

4.1.3 Human Geography

Projects of HG focus on large areas and are often interested in island-wide patterns. Again we note an earlier and primary focus on eastern Crete. Lehmann and Wroncka are the most characteristic examples of this tradition, studying and mapping settlement location in relation to specific geographical factors within a Landeskunde framework. Their research concerns eastern Crete and overlaps. Faure explored the island extensively over many years, also focusing on specific site-types and geography; the map given as an example shows villages and towns of the mountains and divides the island in regions extensively discussed in his text. Nowicki is also interested in the whole island. The example-map presents peak sanctuaries and zones of influence throughout Crete, corresponding to specific research questions relevant to geographical factors.

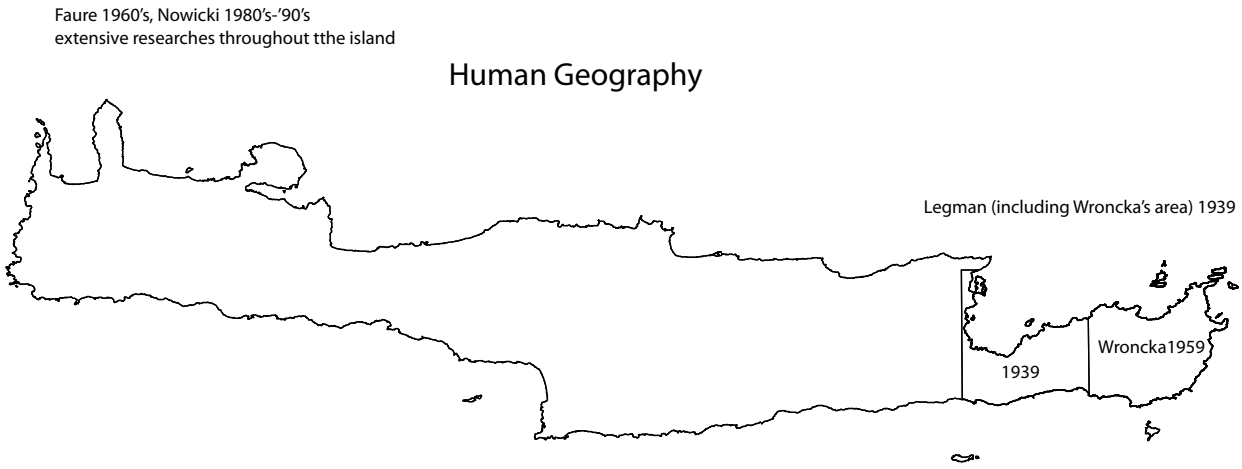


Fig. 4.1.3 Areas covered by HG projects. Faure and Nowicki have explored the whole island, while Wroncka studies part of the area covered by Lehmann.

4.1.4 Topographic Tradition

Projects that belong exclusively in TT as defined in the current study have not been numerous, even though most landscape projects on the island have a topographical component and strong bonds with the tradition. Again eastern Crete has received most attention and Knossos has been the focus of a most important project, with the mapping of a great number of loci exhibiting archaeological interest. Plans and sketch-maps of sites in relation to topographical features are the core of archaeological production in this tradition. The fact that this tradition includes current projects, even if in connection with more recent developments, proves the central role it has played in archaeological research.

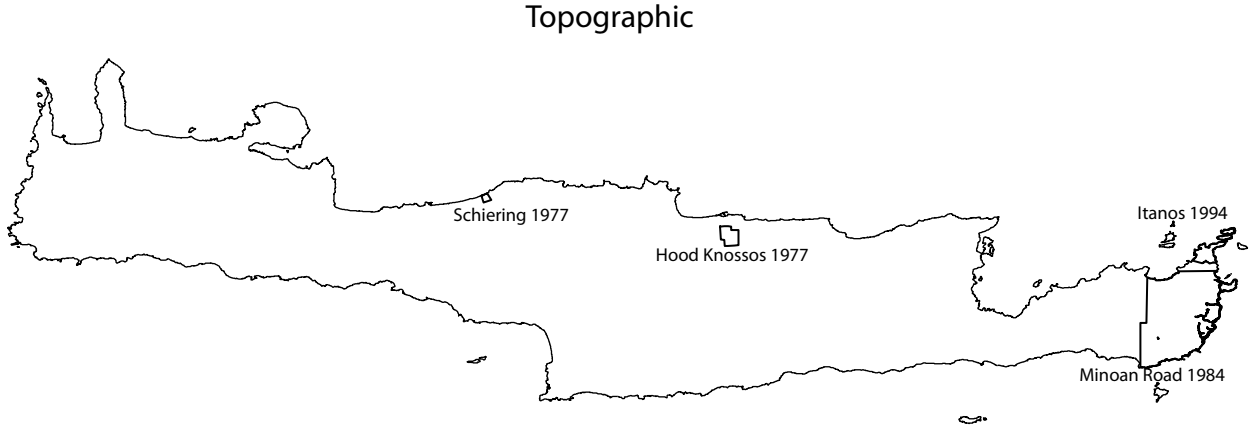


Fig. 4.1.4 Areas covered by projects of the Topographic Tradition over time.

4.1.5 Landscape Tradition

As shown, the island of Crete has been a significant pole of attraction for archaeologists, who the last 35 years have been exploring its landscape with great intensity. Considering the great number of regional surveys, with variable problem orientation and methodology, Crete has in fact been a playground of new methods and theories, even though it should be noted that usually the same archaeologists are involved in more than one project. The established practice of focusing on the eastern part of the island is particularly apparent in LT with the 80's and early 90's being the time of the most intensive landscape exploration, including context, regional and urban intensive surveys. Samples from the maps published, demonstrate the themes considered important to present, and which exhibit great similarities, but also differences among them. Presentation of the survey boundary is a must and the most common maps are ones with sites per period in a background of contours. However, a few may present their data in the form of density variations.

In all traditions, archaeological landscape visualisation is guided by horizontal spatial relationships. Loci of human activity are presented in relation to contours, which represent a measured representation of topography, and secondarily geographical factors may also be mapped in a two-dimensional space. Overall, there has always been a focus on regional, low-resolution spatial visualisation of 'where' archaeology is.

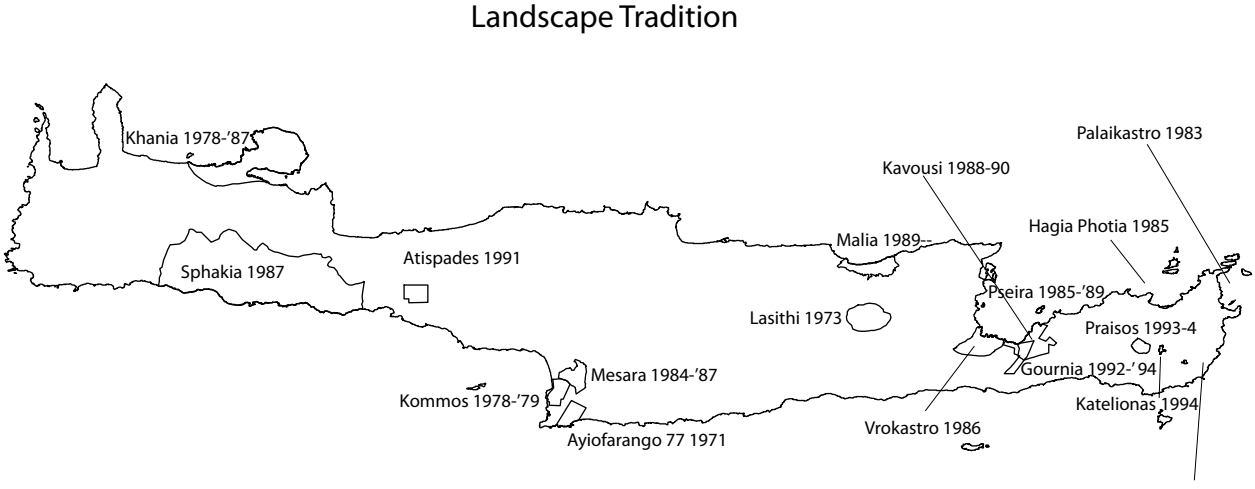


Fig. 4.1.5 Areas intensively surveyed by projects of the LT over time.

4.2 'Surveys' Database Analysis: the Sample

The database allowed the collection and organisation of a rich amount of information about archaeological landscape research projects in Crete, and made possible qualitative and quantitative analysis that promotes understanding and evaluation of the knowledge acquired since the first days of archaeology. *Tables 4.2.1 and 4.2.2* describe the projects studied in the database. Those whose chronological and function interpretations could be classified and allowed quantitative analysis are highlighted. Because of the fact that LT guides archaeological landscape approaches in the present, and has provided the largest amount of sites promoting a desire for comparability, priority has been given to projects of this tradition and therefore almost all of them were included. Naturally, not all projects from all traditions could be analysed as there have been tens of Travellers and hundreds of archaeological reports. However, the sample is believed to be representative of the relevant traditions and achieves its purpose of elucidating relationships between theory, methods and results. At this point, it is important to note that no evaluation of the precision of the analysis can be obtained, and therefore, it is not claimed that the analysis has any statistical value. Statistical calculations have been used on the quantitative data so as to allow basic comparisons among and within traditions and indicate various trends.

survey id	Tradition
Sieber	Travellers
Pashley	Travellers
Pendlebury 1934	Culture History
Travels in Crete	Culture History
Hood 65	Culture History
Hagios Vasilios 66	Culture History
Hood 67	Culture History
Ayiofarango 75	Culture History
Ayiofarango 89	Culture History
Lehmann	Human Geography
Wroncka	Human Geography
Faure	Human Geography
Nowicki	Human Geography
Hood Knossos	Topographic
Schiering	Topographic
Minoan Roads	Topographic
Itanos	Topographic

survey id	tradition
Ayiofarango 77	Landscape Tradition
Lasithi	Landscape Tradition
Kommos	Landscape Tradition
Chania	Landscape Tradition
Palaikastro	Landscape Tradition
Phaistos	Landscape Tradition
Hagia Photia	Landscape Tradition
Pseira	Landscape Tradition
Vrokastro	Landscape Tradition
Sphakia	Landscape Tradition
Kavousi	Landscape Tradition
Malia	Landscape Tradition
Aghios Vasilios Valley	Landscape Tradition
Gournia	Landscape Tradition
Gavdos	Landscape Tradition
Praisos	Landscape Tradition
Katelionas	Landscape Tradition
Lamnoni	Landscape Tradition

Table 4.2.1 Archaeological landscape projects included in the database; the ones that produced site catalogues are highlighted.

Tradition	Surveys studied	Surveys analysed quantitatively	Site numbers
Travellers	2	1	80
Culture History	7	7	388
Human Geography	4	2	264
Topographic	4	3	480
Landscape Tradition	18	13	1691

Table 4.2.2 Survey projects per tradition; number of projects per tradition that produced site catalogues (and were analysed quantitatively); total number of site characterisations per tradition.

4.3 Trends in Aims

Table 4.3 allows us to see the principal aims set by projects of the various traditions and discuss similarities and differences among them. Researchers of the Culture History tradition walk the landscape with the goal of finding new sites or describing archaeological remains of known ones, most often aiming at both. The description of known sites is a goal also set by Schiering, who however, belongs to TT and follows a different approach focusing on mapping and topography. Researchers within TT are usually triggered by interest in an important site or specific site-types. The latter (usually settlements) is the principal goal of HG also, which however asks different questions, focusing on the role of geography. LT differentiates itself with an interest in recovering settlement history at a regional scale, often triggered by interest in a specific site. Urban and context survey are common aims between TT and LT, but of course, the methodological approach differs. Topographic research is however often part of a project within LT. Lastly, the Travellers have a typical aim of describing Crete in general. Overall, a site focus is apparent in CH and TT, while LT and HG have a more

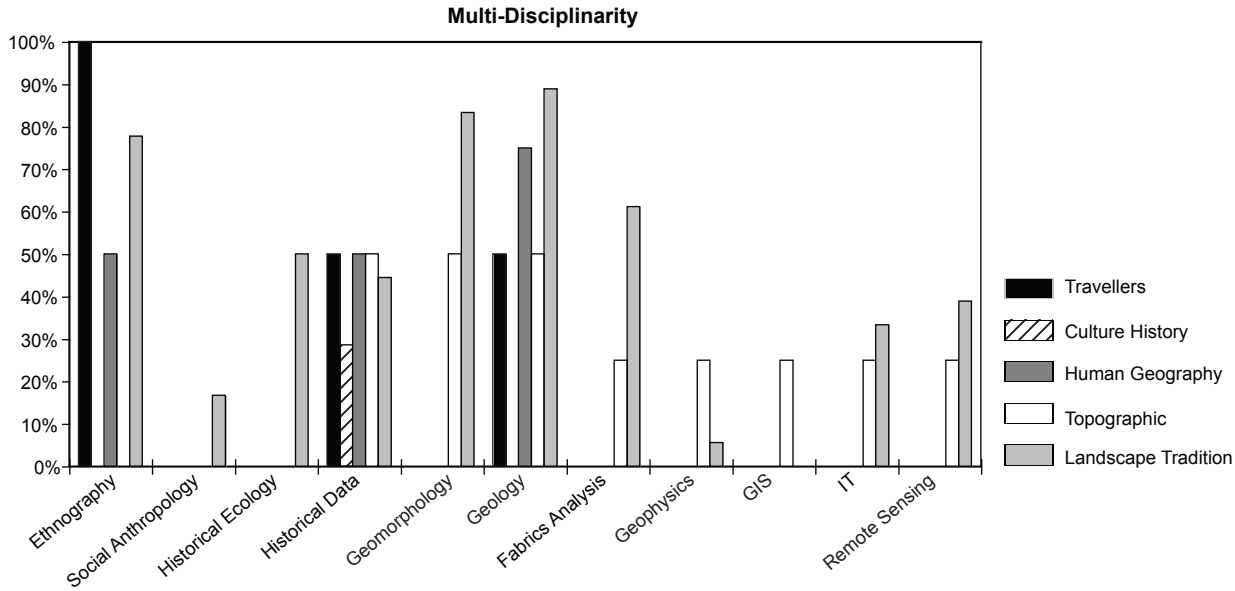
regional approach. Even though aims usually differ from tradition to tradition, at times they are the same, but then methodology is distinctively different.

No of projects	aims	tradition
2	discover new sites	Culture History
4	describe known sites and discover new	Culture History
1	describe known sites	Culture History
2	study specific site-types	Human Geography
2	settlement geography	Human Geography
1	urban survey	Landscape Tradition
2	urban and context survey	Landscape Tradition
6	regional settlement history	Landscape Tradition
9	context survey and regional settlement history	Landscape Tradition
2	urban and context survey	Topographic Tradition
1	study specific site-types	Topographic Tradition
1	describe known sites	Topographic Tradition
2	describe Crete	Travellers

Table 4.3 Numbers of projects per tradition grouped according to their aims.

4.4 Trends in Multi-Disciplinarity

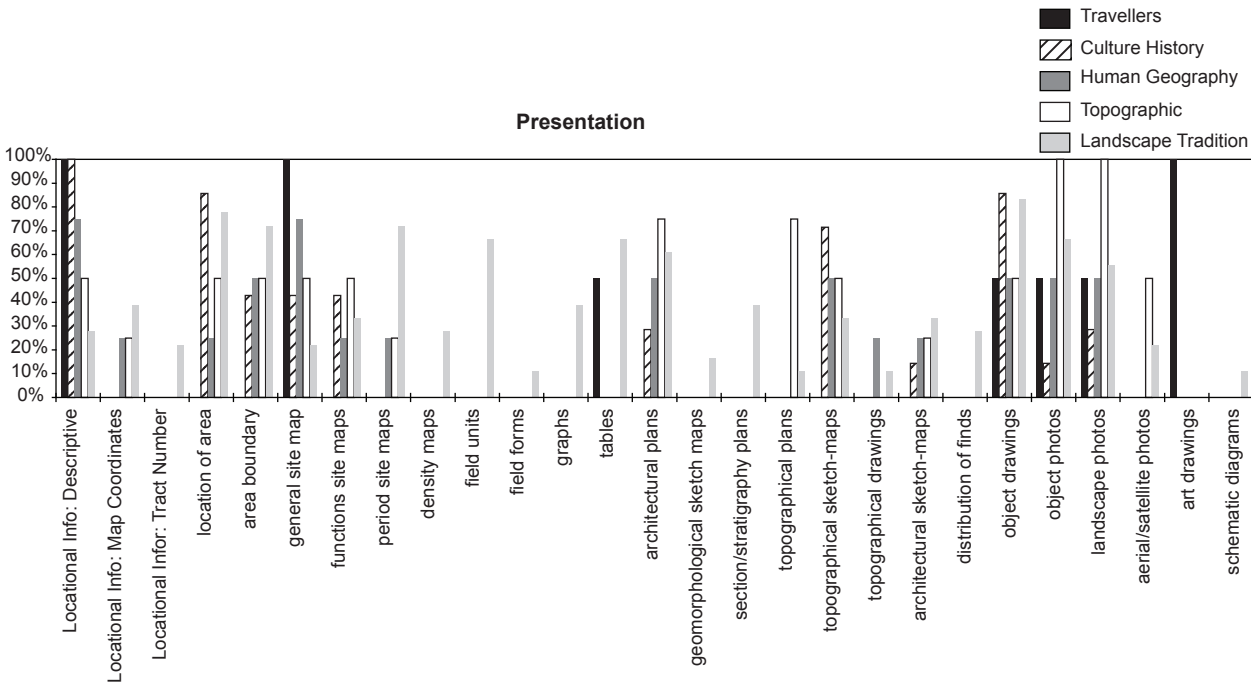
An interesting matter to discuss is the influential background of other disciplines and how this has developed over time and in different traditions. *Graph 4.4* shows the percentage of occurrence of the various fields (x axis) per tradition (how many projects out of the total number of projects per tradition use other disciplines). It aims to describe multi-disciplinarity of the various traditions, which relates to general conceptual framework, and enhance comparison among them, elucidating similarities and differences. A general pattern is the complex multi-disciplinary framework of LT, whose projects use approaches of both human and physical sciences in their effort to record and interpret the surface record. Geology and geomorphology are the most common; the first is related to the traditional links between the two disciplines, the second is the result of methodological concerns regarding the interpretation of the relationship between archaeological data and the evolution of the physical landscape. Ethnography, ceramic fabric analysis, historical ecology and historical data follow, expressing methodological developments in data interpretation (fabrics analysis), a diachronic scope and an acknowledgment of the potential of the ethnographic record in making inferences about the past. TT gives emphasis on detailed recording and its methodology has been more influenced by physical sciences, while HG focuses on geology (environmental record), historical data and ethnography, reflecting its interest in diachronic relationships between man-environment. CH presents the narrowest framework in terms of multi-disciplinarity, focusing on recording and describing archaeological remains, but not on methodology or complex historical reconstructions. Lastly, the Travellers have a general interest in their contemporary society (ethnography) and read ancient writers (historical data), while their attention to geology reflects the importance given to physical sciences at the time. Overall, the stronger link between traditions is their common interest in historical data. Geology has also been of primary importance in archaeological research from the very beginning and ethnography is the third most common interest the various projects share. New technologies are encountered only in LT and a current project of the Topographic Tradition (Itanos).



Graph 4.4 The x axis shows the various disciplines integrated in archaeological landscape projects and the y axis shows the percentage of multi- disciplinarity per tradition (how many projects out of the total number of projects per tradition use the various other disciplines)

4.5 Trends in Presentation

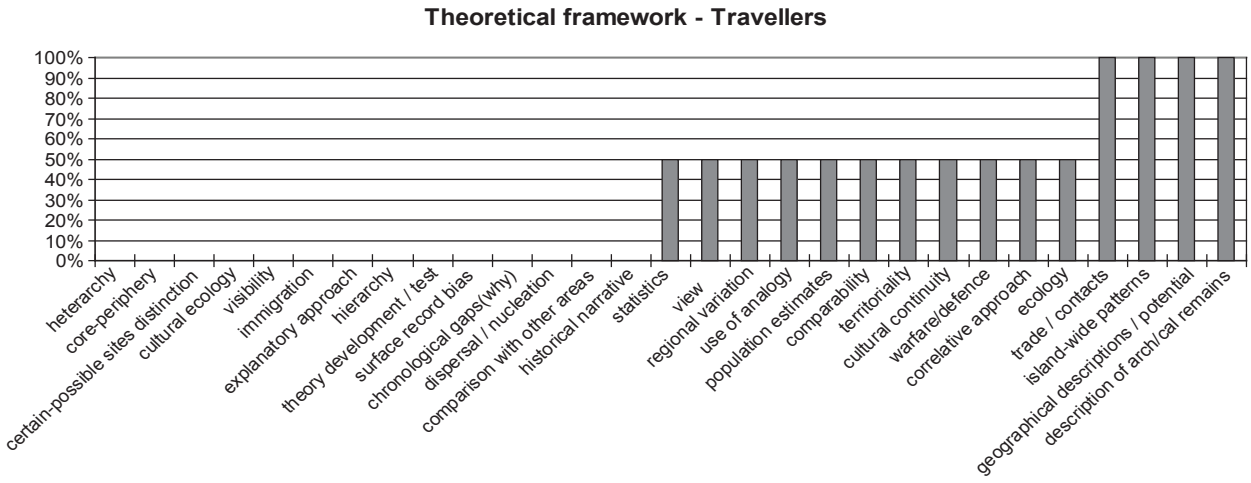
Presentation is a most important part of archaeological research since it is the means of disseminating information and ideas. Moreover, it reflects the conceptual framework within which research is undertaken and highlights what is considered as important information to publish. *Graph 4.5* allows us to make intra-tradition observations as well as inter-tradition comparisons. Site records are of course the principal information published by archaeological projects, and these include descriptions of archaeological remains and descriptions of site-locations. A descriptive account is the only record of site-location for CH and the Travellers and the principal one for HG and TT. This reflects the importance given to relocation, even though accounts may be rather vague and often not helpful enough to actually achieve this purpose. In any case, the answer to the question 'where archaeology is' is considered as proper discourse for all traditions. LT describes locations also, but favours map co-ordinates and at times reference to site location uses tract numbers, which in fact do not assist relocatability whatsoever, but may be used only as intra-project reference points and perhaps site spatial relationships. In general, we note that there is a significant convergence among traditions in what is considered important to present. Except for site location, 'proper' presentation consists of visualisation of the position of the research area within a more general spatial context, and general site maps which are usually accompanied by function legends. Architectural plans, sketch-maps, object drawings and photos reflect the importance of archaeological material records, while landscape photos offer a more pragmatic visualisation of the landscape studied. Topographical sketch-maps are also common among different projects representing the leading role of topography, which even if not explicitly studied and integrated in the interpretation, it is usually recorded. Variation in the above presentation-themes' ratios among traditions reflects of course differences in how important these are considered, but overall we identify a common ideology among projects in what information it is important to publish. LT however, distinguishes itself with a much more variable collection of presentation themes, some of which are noted only in this tradition. More specifically some themes relate to the methodology of LT fieldwork (density maps, field units etc) and analysis (graphs), while period site maps are the result of the principal aim in LT projects of reconstructing settlement patterns over time. The Topographic Tradition focuses on presenting architecture and topography.



Graph 4.5 The x axis shows the various themes of presentation in archaeological landscape projects; the y axis shows how much each theme is represented in each tradition (how many projects out of the total number of projects per tradition use each presentation theme).

4.6 Trends in Theoretical / Interpretative Framework

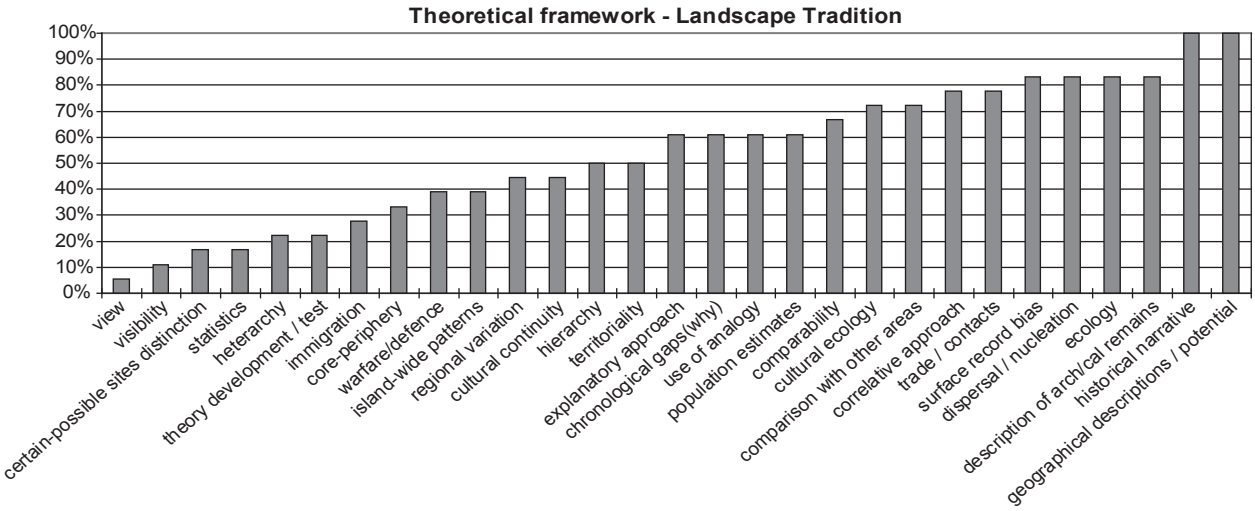
Graphs in this section allow us to visualise the occurrence of theoretical concepts used in interpretative suggestions of each tradition. The x axis presents such concepts and themes discussed, while the y axis shows the extent to which each concept is used in the various traditions (in percentages), in other words, how many projects out of the total number for each tradition use each concept. The Travellers tradition (graph 4.6.1) consists only of two projects, so we can not actually have a picture of any statistical value, but we can see which theoretical themes have been discussed and thus represent their theoretical framework. As observed, even though the Travellers have in general worked within quite an even framework, some may have more diverse interests than others. It is very interesting to note that there are concepts still used in archaeological landscape explorations now, that can be discerned already in landscape study approaches of the 19th century.



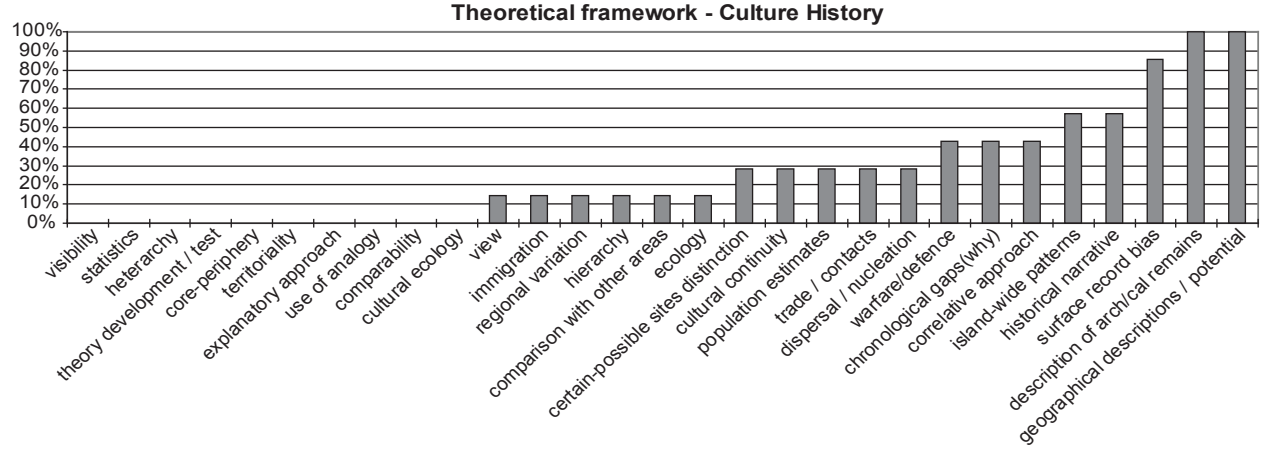
Graph 4.6.1 Theoretical concepts used by Travellers (x axis) and the extent to which these concepts have been used in this tradition (y axis)

The values that represent the highest percentages in graphs 4.6.2 and 4.6.3 show the points of convergence and divergence between LT and CH. The most common characteristic is that all projects observe and describe the geographical context, within which archaeological material exists, evidence of the strong links between the two disciplines. The importance of geography is evident in the relatively high percentages of the correlative approach also, since most correlations concern location and geographical/environmental parameters. The problematic nature of the surface record is noted by most projects, even though the methodology adopted by LT tries by default to deal with relevant biases more consistently (although surface record biases are seldom treated explicitly and in a complete manner). Warfare/defence is also a theme of similar popularity for both traditions and in general most themes discussed by LT, have their roots in CH.

LT however, has a much stronger ecological approach and has developed an interest in complex social issues, such as hierarchy, heterarchy, population fluctuations, and above all, it seeks to explain patterns of nucleation and dispersal of settlement. It presents a much wider theoretical framework within which observations and interpretations take place, and a greater consistency in the ideas explored, as most themes are discussed by the majority of projects within the tradition. The primary concern of LT is to provide a historical narrative, while CH gives priority to the description of archaeological remains, even though both goals are of great importance for both traditions. CH concentrates on the presentation of observations and its focus on cultural identification and description is also evident in the importance given to island-wide patterns.

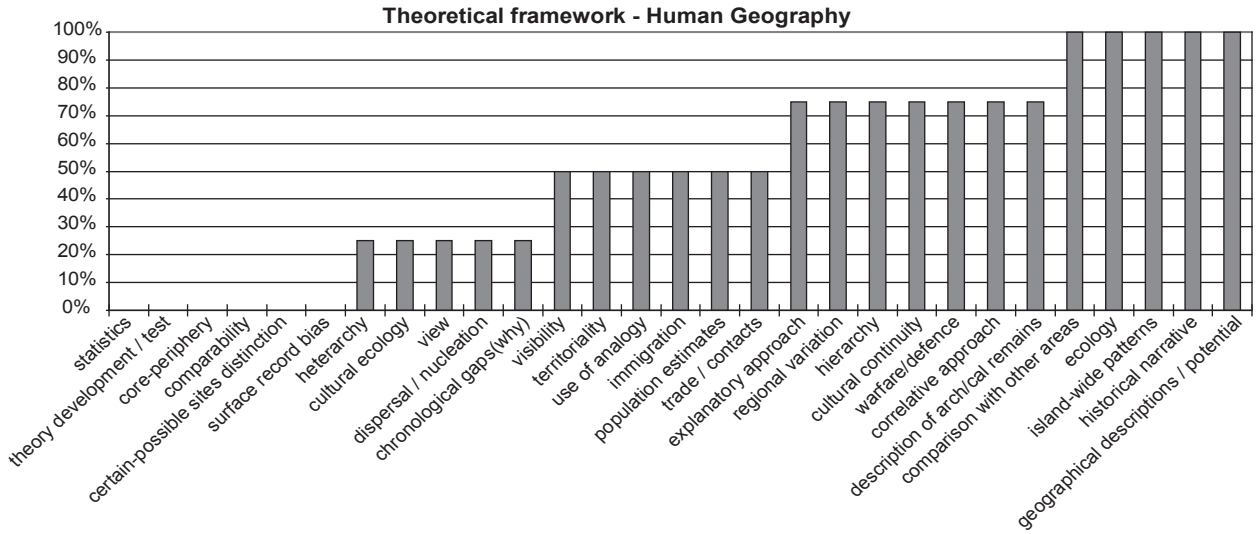


Graph 4.6.2 Theoretical concepts used by projects within LT (x axis) and the extent to which these concepts have been used in this tradition (y axis)

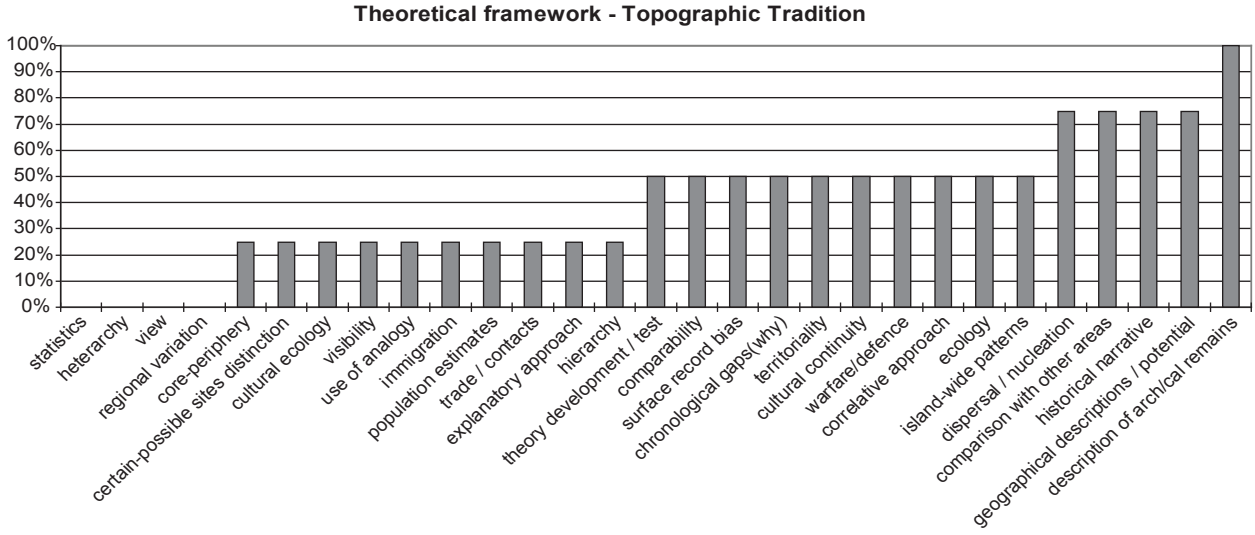


Graph 4.6.3 Theoretical concepts used by projects within CH (x axis) and the extent to which these concepts have been used in this tradition (y axis)

Human Geography (graph 4.6.4) shows clearly the primary interest of the relevant projects to study human settlement in relation to geography and ecology. They have a historical approach and study island-wide patterns as well as regional variation. The social themes explored are discussed within an explanatory framework; these concern mainly hierarchy and warfare, but also other themes common in Cretan (mainly Minoan) archaeology in general. The Topographic Tradition (graph 4.6.5) focuses on describing archaeological material, but in general it has encompassed approaches from all other traditions. Indeed, even though all projects focus on topography and mapping of archaeological remains, some have stronger links with CH (Hood Knossos, Schiering), and others with LT (Itanos), or HG (Minoan Roads).



Graph 4.6.4 Theoretical concepts used by projects within HG (x axis) and the extent to which these concepts have been used in this tradition (y axis)



Graph 4.6.5 Theoretical concepts used by projects within TT (x axis) and the extent to which these concepts have been used in this tradition (y axis)

4.7 Trends and Degree of Confidence in Chronological Characterizations

An interesting issue which the database aimed to enlighten is the possible trends that can be identified in chronological characterizations for the different Landscape Traditions. At the same time, the degree of confidence in those characterizations can also be observed. Interesting questions include: Are there particular periods favoured by different traditions and how do traditions differ regarding the uncertainty declared? Observations are grouped by tradition and major chronological period. The identification of such possible

trends is hoped to elucidate the framework within which the various projects operated and help us understand if there are important differences among their results and why, and perhaps also what to expect.

However, quantitative comparisons based directly on the relevant numbers of sites per project and tradition, are not meaningful given the variation in total numbers of sites discussed by each project, relevant to a project's size and intensity. Thus, comparison is based on the percentage of occurrence of each chronological characterization for every tradition (out of the total number of sites per tradition, how many have a PH, GR or BVT characterization and how many a possible PH, GR or BVT?). The same calculations could of course be made for all chronological classes included in the database, which would give us trends in a finer chronological scale, but here only major trends are discussed.

Table 4.7 shows the percentages of chronological characterisations per tradition. 'Sum' refers to the total number of 'All PH', 'PH?' (etc) site characterisations per tradition; N is the total number of sites. 'All PH' includes characterisations both with a finer resolution within PH and those without. 'PH?' consists of characterisations with a declared doubt, again whether of a finer resolution within PH or not. 'Only PH' contains those characterisations which are not classified in a finer chronological scale (sub-periods) within PH. 'Finer PH' is 'All PH' minus 'only PH', giving us characterisations of a finer chronological scale. The same applies in GR and BVT.

Tradition	All PH: sum / N	PH?: sum / N	only PH: sum / N	Finer PH: sum / N	All GR: sum / N	GR?: sum / N	only GR: sum /N	Finer GR: sum / N
Culture History	63%	8%	7%	56%	44%	4%	10%	34%
Human Geography	81%	14%	2%	80%	20%	2%	0%	20%
Landscape Tradition	68%	2%	14%	54%	38%	2%	1%	37%
Topographic	56%	4%	0%	55%	43%	5%	4%	39%
Travellers	0%	0%	0%	0%	63%	5%	58%	5%

Tradition	All BVT: sum / N	BVT? sum / N	only BVT: sum / N	Finer BVT: sum / N	MOD: sum / N	MOD?: sum / N	unknown: sum / N
Culture History	10%	3%	8%	3%	3%	0%	3%
Human Geography	2%	0%	0%	2%	1%	0%	2%
Landscape Tradition	39%	2%	6%	33%	14%	0%	2%
Topographic	1%	0%	0%	1%	1%	0%	4%
Travellers	21%	0%	5%	16%	25%	0%	4%

Table 4.7 The extent to which various chronological characterisations have been used in the five traditions (in percentages)

Based on the above table a number of graphs show us various trends in the chronological periods favoured by different traditions as well as their degree of confidence: *Graphs 4.7.1 and 4.7.2:* a preference for the PH period is evident in all traditions except of course for the Travellers, who wrote about Crete mainly before the 'discovery' of its prehistoric past. The birth of Minoan Archaeology during the first days of Archaeology itself, and its importance as Europe's own and glorious ancestral civilization, determined archaeological research on the island thereafter and still does, in much the same way as Classical Archaeology elsewhere overshadowed interest in other historical periods (Papadopoulos 2005). GR comes second in popularity and in general, discussion of human activity decreases as antiquity lessens. This is of course a result of archaeological interest,

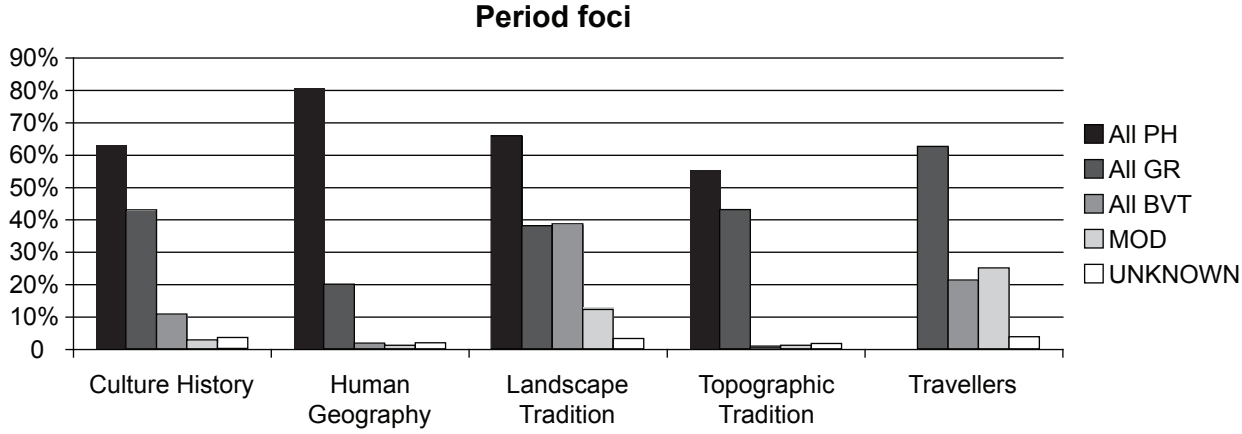
as it is obvious that site characterisations do not represent a realistic picture of sites and therefore cultural density overtime, but rather the variation of significance given to the various periods. The emptiness of the BVT landscape in relation to previous periods represented in most researches is quite impressive.

Looking into each tradition, the Travellers stand out with the highest interest in GR and MOD times. It was the classical past of Greece that brought Travellers to the country and the island of Crete, which apart from mentions in ancient authors, was an unknown cultural and physical space and therefore a rich ground for exploration and new discoveries. Their second interest in their concurrent times represents mainly the description of monasteries, but their concern in describing their present landscape is also responsible for BVT characterisations, as many refer to forts, which formed quite impressive landmarks. It is only with LT, almost a century later that interest in concurrent with the researchers time revives, even if slightly.

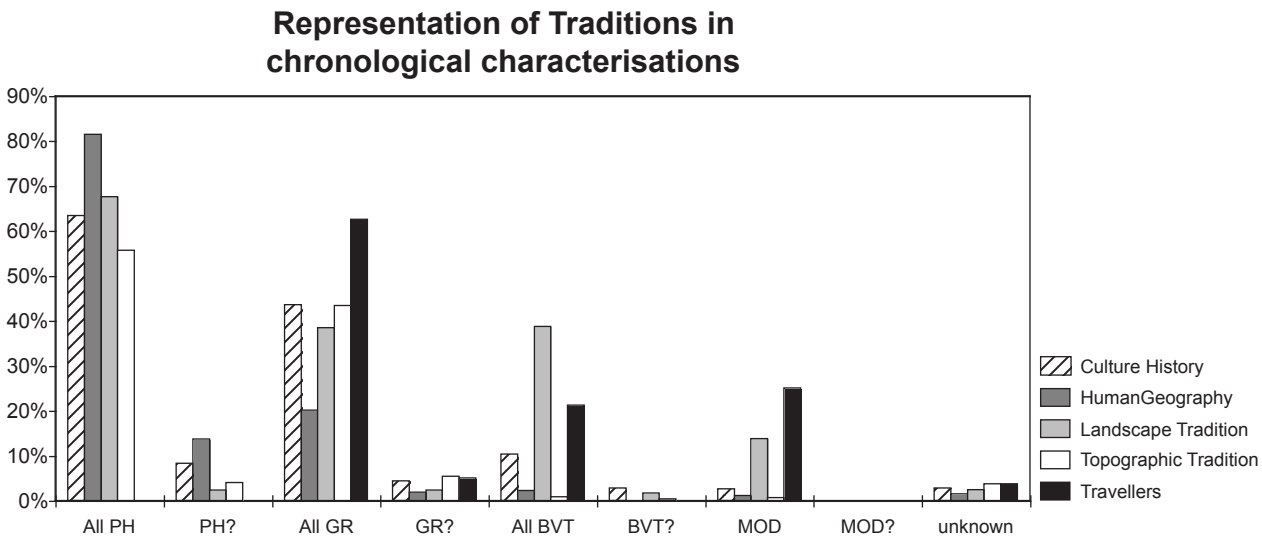
Interestingly enough, LT shows an equal concern for the GR and BVT landscapes; high percentages in all periods express the tradition's research interest in the historical evolution of the landscape. LT's interest in diachronic reconstructions in a way follows CH's tactic of recording the GR consistently and showing some interest for later periods also, according to the requirements of 'proper discourse'. However, LT has developed different methods and a more complex interpretative framework. In any case, CH and LT have only marginal differences in both the PH and GR periods. CH also shows an interesting similarity with TT regarding proportions of the PH and the GR characterisations, but these are due to Hood Knossos, a topographic survey undertaken by one of the most important representatives of CH. TT is usually more concerned with a specific period, and the mapping of its material remains.

Human Geography shows the strongest focus on a specific period (PH), as researchers usually explore specific questions relevant to geography. The two projects analysed quantitatively study chiefly the relationship between locational choice and the environment at that time. However, we should note that other researchers of the same tradition (survey id: Faure and survey id: Lehmann), even though also particularly interested in the PH, they studied the GR period as well, since their primary concern was on recurring patterns of associations between geography and cultural behaviour.

Overall, TT and HG are more period-specific and their questions relate mainly to geography, topography and mapping, while CH and LT aim rather at providing images of human activity over time. Traditions do not differ very much regarding their interest in the PH period, as they all share a comparable interest in Minoan times. Interestingly enough, the proportion of sites of unknown date is also quite similar among traditions.



Graph 4.7.1 The 5 traditions (x axis) and their relevant interest in the main periods, given in percentages of chronological characterisations (y axis).

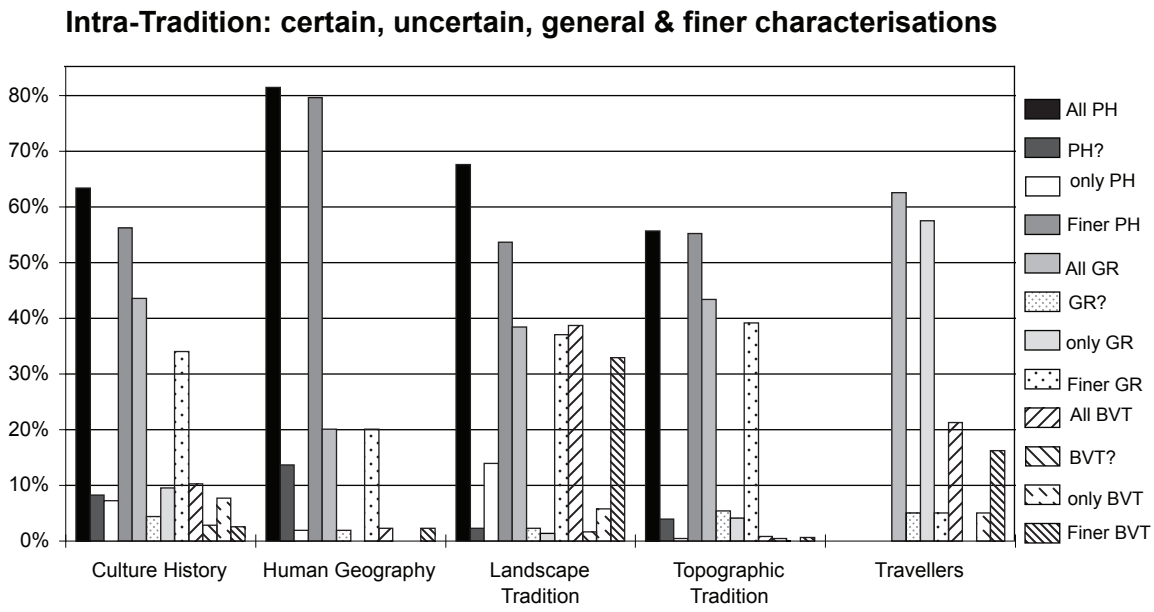


Graph 4.7.2 The main periods of certain and uncertain chronological characterisations (x axis) and the extent to which these are used by the various traditions (y axis).

Graph 4.7.3: When considering trends in chronological periods and uncertainty in assigning a chronological characterisation to a site, it is important to take into account precision as well, in terms of whether a general chronological term (PH, GR and BVT) refers to a sub-period or not. In graph 4.7.3 we can observe the relationship between certain, uncertain, imprecise and fine chronological characterisations used by the different traditions. 'only PH', 'only GR' and 'only BVT' exclude sites with a finer chronology within this period, and reflect only probable and general pictures of large slices of the past since understanding of processes depends on a good chronological resolution.

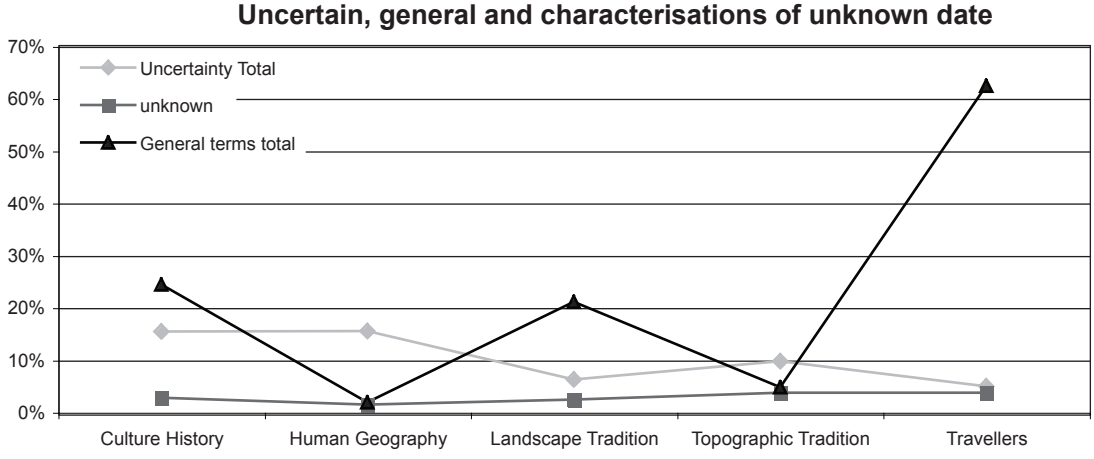
Looking into traditions, HG deals with better dated sites in the PH as it focuses on trying to answer specific questions regarding prehistoric human settlement. Relevant to its highest interest in the PH is the highest proportion of declared PH uncertainty, but general terms are hardly ever used, and this is the case also for the GR, which even though not as much studied, sites discussed are quite well dated. A finer chronology has been achieved also for the BVT, even though periods after late antiquity have been of minimal interest for this tradition.

Comparable are the proportions of fine PH chronology among other traditions studying prehistoric sites and very similar are their proportions of finer GR dating also. CH records more sites of the GR period, but uses quite a larger proportion of uncertain and general terms than the other three. In fact, uncertain and general characterisations are used in all periods, representing the aim of projects within CH to record any activity observed in the landscape. What is most interesting is a similar pattern observed in LT, but its proportions of uncertain and roughly dated sites are less, with a much higher proportion of finer dated BVT sites, and in fact almost as high as the GR. TT shows almost the same lack of interest for periods after late antiquity as HG, but a rather high precision in the periods it studies, while the Travellers describe sites roughly dated in the GR, but distinguish between Byzantine, Venetian and Turkish for most of their BVT sites.



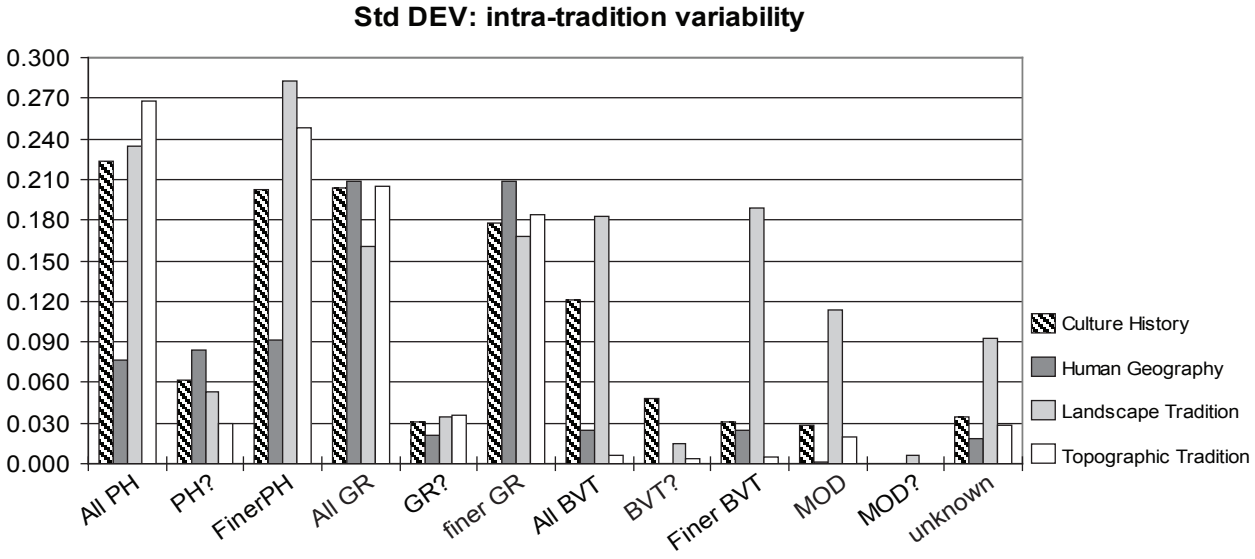
Graph 4.7.3 The y axis represents the percentage of occurrence of certain, uncertain, general and finer chronological characterisations for the three main periods (what is the percentage of All PH, PH? etc out of the total number of chronological characterisations for every tradition).

In *graph 4.7.4* we have an overall picture of uncertain, general and characterisations of unknown date. We can see that CH uses more uncertain and general terms than other traditions. HG discusses sites of uncertain date (mainly PH), but hardly ever of rough or unknown chronology, contrary to LT that observes patterns of general chronology only a little less than CH. The Topographic Tradition includes more sites of uncertain date (and as many of unknown date) than roughly dated ones, while Travellers, expectedly are interested in a general picture of the GR landscape.

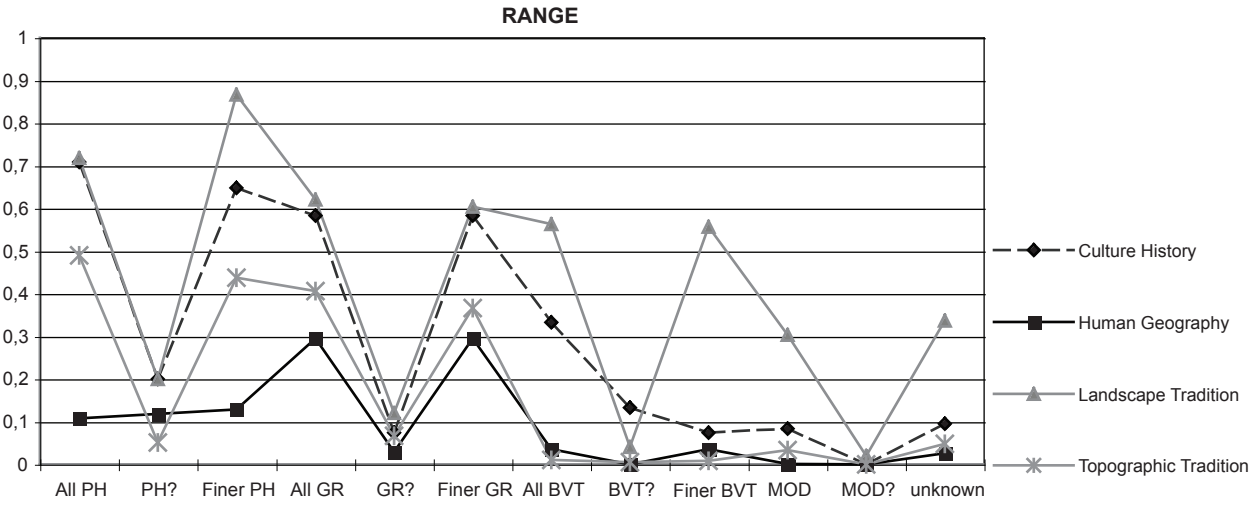


Graph 4.7.4 The extent to which uncertain, general and characterisations of unknown date have been used by the different traditions (in percentages: how many characterisations have a question mark out of the total number of sites per tradition, how many are of unknown date and how many are only general, without including PH, GR and BVT characterisations of a finer scale)

An interesting issue to observe which indicates intra-tradition consistency in the above chronological trends is the variation between projects of the same tradition in discussing various periods. In other words, it is attempted to discern how much different projects converge in assigning chronological characterisations, which are used to describe general trends of the various traditions. It is a fact that not all projects within the same tradition are the same and some have a much stronger impact on a tradition's characteristics. *Graph 4.7.5* presents variability within traditions, which has been calculated on the basis of the Standard Deviation function of Excel. STDEV is again based on the percentages of the relevant characterisations out of the total number of sites for every tradition and does not of course have any statistical value, but is used as an indication of how much projects within the same tradition differ in all their chronological characterisations. Overall, variability is not that great for any tradition, which represents a consistent enough framework within which researchers have worked. However, it is interesting to observe existing variability and try to explain the reasons behind it: LT shows the highest overall diversity; As all but one project (Praisos) have a stronger interest in Minoan times, PH variability might in fact represent a real picture of variability in PH activity among different regions. Also, since almost all of them record a diachronic landscape, diversity in later periods seems to be representative of the real picture as well, but in fact this is also a result of the different importance given to more recent periods. Variability in finer dated periods represents the difference between projects to provide good dating, which may be relevant to whether a project has reached final publication, but it may not. As a result, we need to pay attention when trying to integrate data from different projects, and try to assess how far we can use their results and what questions we can answer. HG has a high STDEV for GR as only one project (Nowicki) discusses sites of this period which are in fact exclusively of the beginning of Iron Age and in general of finer dating. The high STDEV of TT represents the different focus of Hood Knossos which is the only project out of the 3 that records post-Minoan sites consistently, while the other two focus almost exclusively on the PH. In CH, variability reflects the fact that some projects focused exclusively on PH, while others aimed at presenting a picture of the ancient landscape in general. The low STDEV for the BVT and Modern landscapes in most traditions reflects the generally very low interest for these periods, which have in fact been studied only by a few projects of LT.



Graph 4.7.5 Intra-tradition variability (y-axis = STD) in the attribution of chronological characterisations (x-axis). Calculated on the basis of how much projects within the same tradition vary regarding the extent to which they use each chronological characterisation (extent of use = percentage of a chronological characterisation occurrence out of the total number of sites).



Graph 4.7.6 The x-axis shows the various chronological periods, certain, uncertain and finer. The y-axis shows the range of occurrence of each chronological characterisation for every tradition, which is a factor representing how much projects within the same tradition differ regarding the extent to which they use the various x-axis values.

Graph 4.7.6: Range (MAX-MIN) has again been used as an indication of the variation within traditions regarding projects' interest in specific periods. Again, as site numbers may not only reflect a real situation, but also be the result of project differences in research intensity, interest in the various periods is extrapolated not from real site numbers, but from the calculation of the percentage of occurrence of each chronological characterisation. So what is compared is how big a proportion of traditions' interpretations represent the various periods. High Range expresses the difference between projects of the same tradition regarding their interest in the various periods. In fact it is usually a result of some projects focusing on specific periods and others studying a diachronic landscape. When in finer dated periods, it represents the fact that some projects have provided good dating, whereas others have not. Points of small range show a similarity between projects in their lack of interest in more recent periods, (e.g. observe the drop in CH after BVT) and the rather low overall percentage of declared uncertainty. HG seems to have the least variability and LT the highest (chronological focus between projects vary a lot).

4.8 Trends in Function Characterisations

Graphs 4.8.1, 4.8.2 and 4.8.3: in order to understand further landscape archaeology traditions, it has been attempted to trace possible trends also in function characterisations for the three main periods. The y-values represent the proportion (percentages) of specific function characterisations out of the total number of sites, calculated for each project and then grouped by tradition. Observations regarding the extent to which different functions have been used, both intra- and inter-tradition are believed to elucidate further the framework within which archaeological landscape research has operated over time. Moreover, together with studies on chronological preferences, they help us understand better the results produced by the various projects.

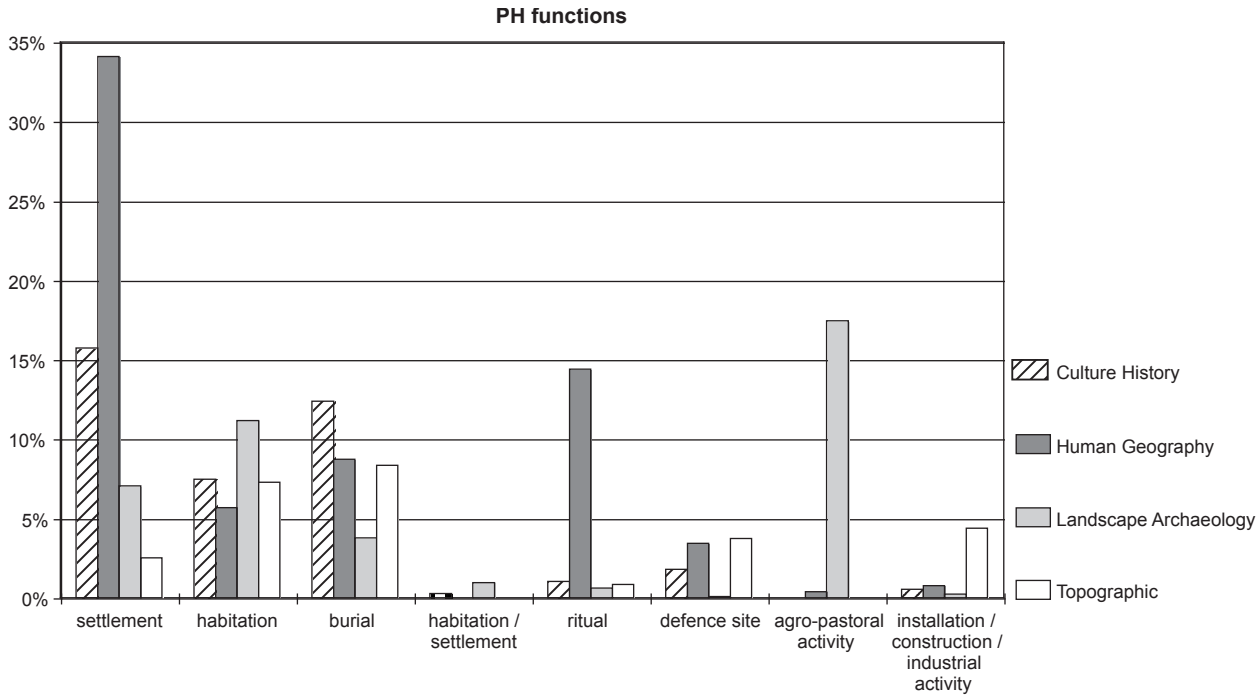
HG has the highest percentage of settlements because of its specific interest in PH settlement activity, a large proportion of which is responsible for the also high percentage of GR settlements as they cover the period of the turn from the Bronze to Iron Age (Nowicki). Religious sites come second in terms of research interest (again mainly due to Nowicki's special interest in PK's), while burials and defensive sites follow, the

last ones studied also in the BVT. PH habitations and burials have been mainly Wroncka's focus. It is evident that projects of this tradition have focused on specific site-types, in particular of the PH period.

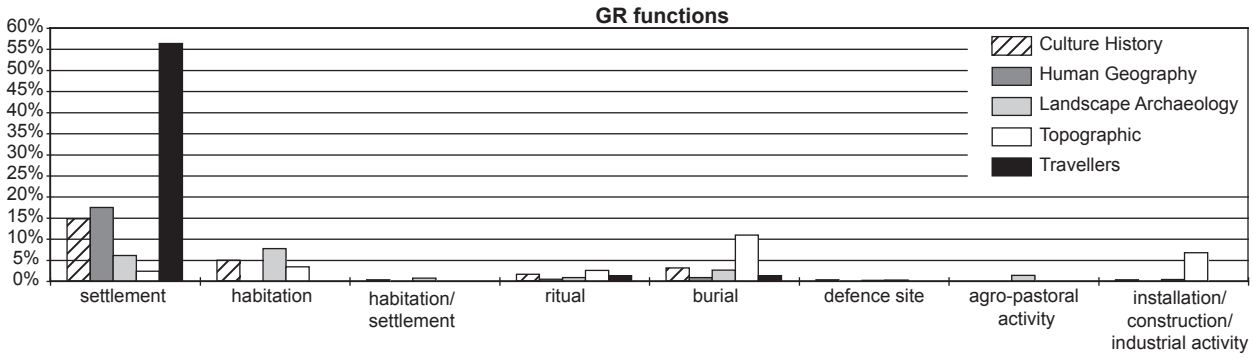
CH also focuses on settlements and habitations and records almost as many burials in the PH. The vast majority of GR characterisations refer to settlements, while in the BVT they focus mainly on ritual sites and forts. A general preference for the PH is also obvious, but we can observe the interest of these projects in recording sites of distinct material culture throughout time. Their interest in specific site-types is not the same for all periods.

TT has a high percentage of PH habitations, burials and sites of industrial activity due to Hood Knossos, which records the same functions also in the GR. Settlements and defensive sites, have been the primary focus of Minoan Roads. Projects of this tradition have also been primarily interested in the PH and almost not at all in later antiquity and show a comparable interest for the same site-types in both PH and GR.

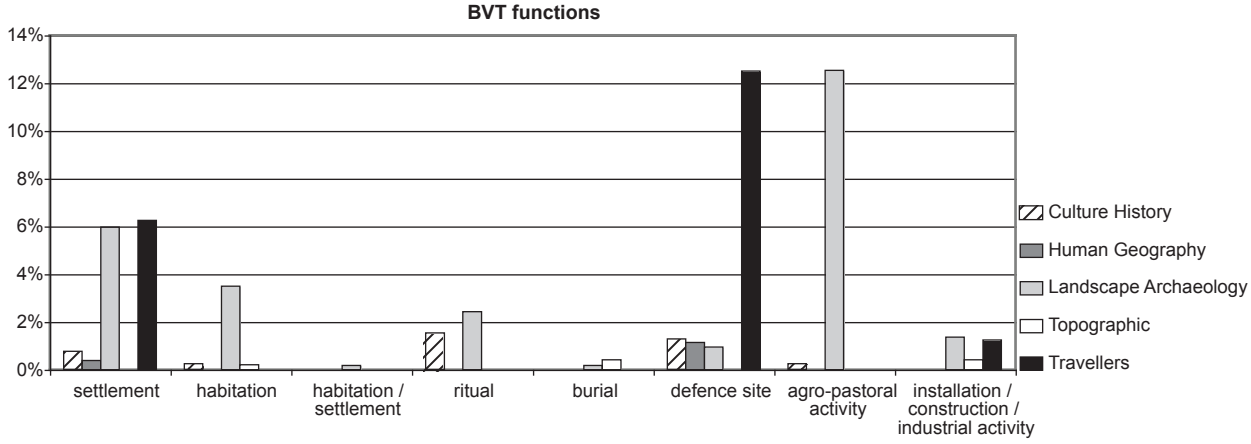
An interesting divergence from the general focus on themes of settlement, burial and religion is the interest of LT in sites interpreted as evidence of agriculture and shepherding, which is of course a natural result of its regional approach and wide interest in variable landscape uses. However, sites of agro-pastoral activity are not explicitly defined, and many noted as field-houses in the BVT would have been called habitation sites in the PH. Settlements and burials form also an important part of the human activity studied; we should note however, the smaller amount of burials in comparison with other traditions, and the higher amount of habitations, which is a result of a more conscious attempt to record settlement hierarchy. An interesting observation is also the evident drop in sites in the GR period, representative of the low interest and relevant lack of knowledge for the GR landscape.



Graph 4.8.1 The x-axis shows common site-function interpretations in the PH period, and the y-axis shows the extent to which they have been used by different traditions, or else the percentage of occurrence of the various functions per tradition.



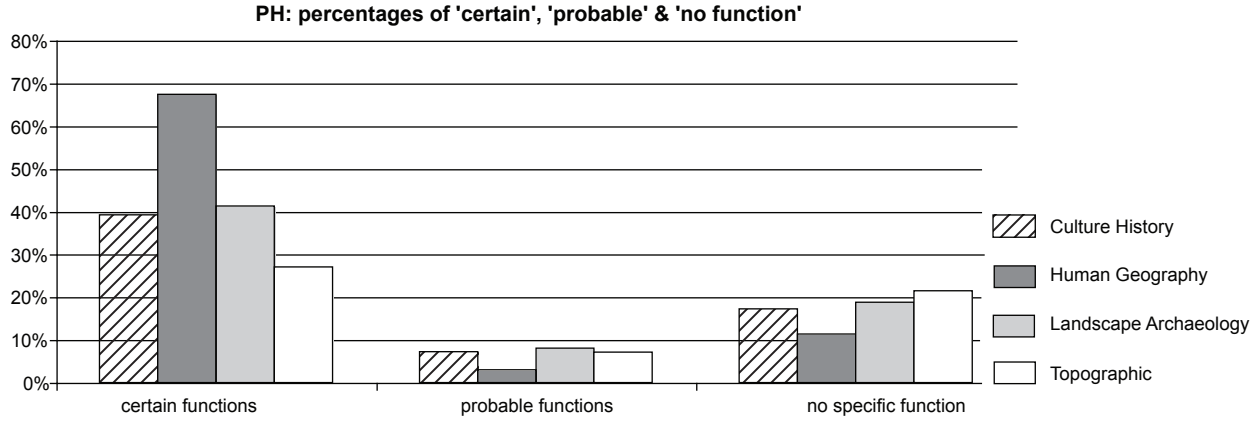
Graph 4.8.2 The x-axis shows common site-function interpretations in the GR period, and the y-axis shows the extent to which they have been used by different traditions, or else the percentage of occurrence of the various functions per tradition.



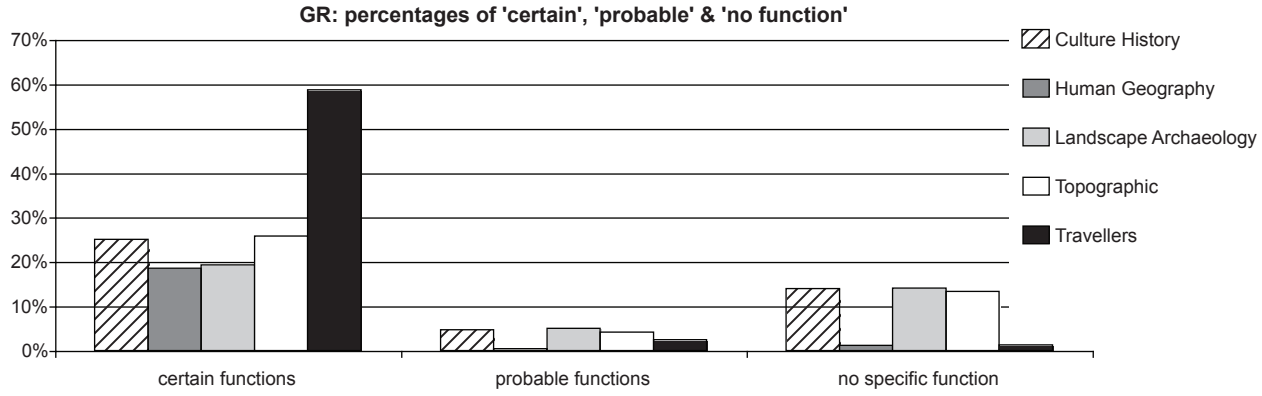
Graph 4.8.3 The x-axis shows common site-function interpretations in the BVT period, and the y-axis shows the extent to which they have been used by different traditions, or else the percentage of occurrence of the various functions per tradition.

Graphs 4.8.4, 4.8.5 and 4.8.6: Interpretations of functions are as important in approaching the past as chronology. The extent to which we can use site interpretations depends also on the usability of function interpretations. Moreover, the relationship between usable and non-usable function characterisations is interesting in terms of studying the various traditions. *Graphs 4.8.4, 4.8.5 and 4.8.6* show the relationship between characterisations of certain, probable and of not defined character, which are basically sites of unknown function or just presence of archaeological remains. Again, percentages have been calculated on the basis of the amount of certain, possible and unknown functions out of the total number of sites for every tradition. As expected, the PH demonstrates a better resolution. However, in general, there is quite a high percentage of interpretations that cannot be used as site data, in terms of understanding human activity in a specific place at a specific time. The GR period seems to be the most problematic in terms of the relationship between the data we have acquired and our capability to interpret it, particularly evident in the Topographic, Landscape and Culture History traditions. Projects within LT and TT seem to prefer to not define function as opposed to proposing a probable one, but this is perhaps also a result of the fact that many projects have not reached final publication. CH also records sites with unknown function, especially in GR and BVT, while HG discusses mainly sites of known function. In *Graph 4.8.7* we can observe what proportion of sites have a defined chronological and function interpretation per tradition and thus, what proportion of site interpretations

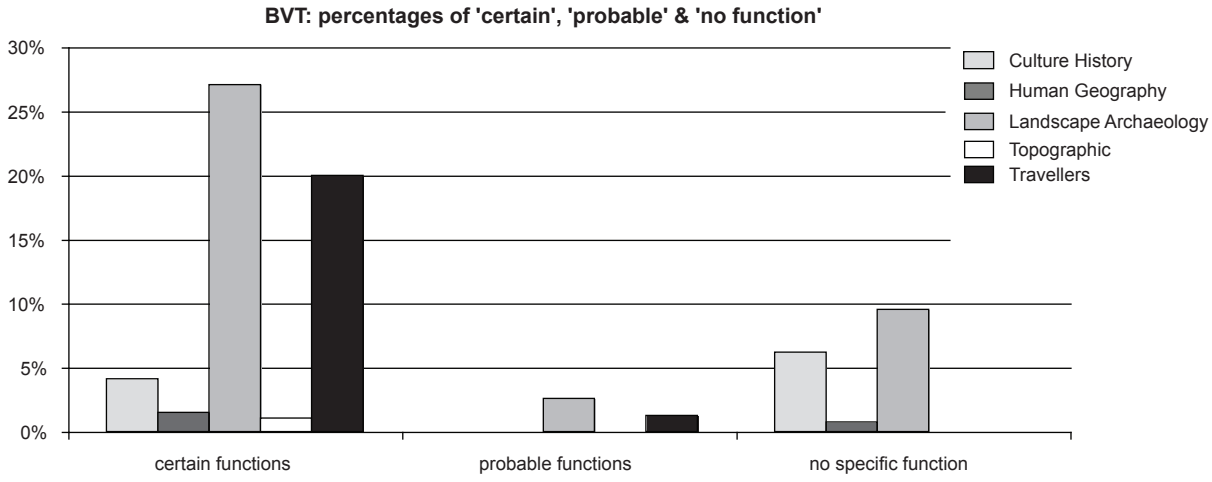
can be meaningfully used to reconstruct past human landscapes and interpret societal structure. It is quite characteristic that even in the much studied PH period, CH and LT allow less than 40% of their data to be meaningfully usable, TT even less, whereas HG deals mainly with sites of defined chronology and function (70%). Percentages of usable interpretations in general decrease in later periods, except for TT, which seems to study both PH and GR equally. It should also be noted that LT defines BVT site interpretations with a very good precision relative to other traditions. Even though projects focus on PH, an interest in diachronic landscapes is apparent.



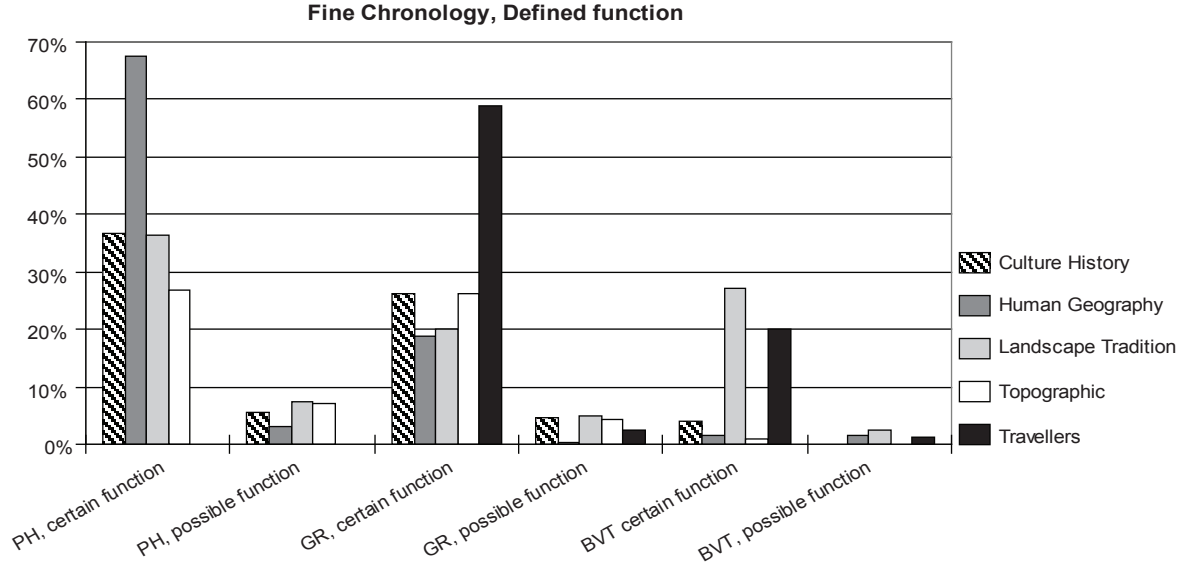
Graph 4.8.4 Relationships between certain, possible and unknown function characterisations in the PH. The y-axis represents the percentage of the above characterisations out of the total number of sites.



Graph 4.8.5 Relationships between certain, possible and unknown function characterisations in the GR. The y-axis represents the percentage of the above characterisations out of the total number of sites



Graph 4.8.6 Relationships between certain, possible and unknown function characterisations in the BVT. The y-axis represents the percentage of the above characterisations out of the total number of sites



Graph 4.8.7 The proportion of sites per tradition that have characterisations of fine chronology and defined function

4.9 Densities

Table 4.9.1 shows the average site density per tradition, based on the projects analysed quantitatively. The area used for LT is the target area declared by each project (the target area of Ayiofarango 77 - 15km² pers.commun. Branigan and Bintliff - is not actually stated in the project and usually an estimate of 20km² has been used by other scholars), whereas areas for the projects of CH as well as for Minoan Roads and Nowicki have been calculated from geo-referenced maps, as there was no relevant information in the publications. HG density is not actually realistic as Nowicki's study area covers the whole island; his densities refer to specific sites and cannot really be compared with site densities of other projects, which record all site-types of all periods. In

fact, site density comparisons have to take into account that project goals may differ in terms of interest in chronological periods and site types and not all archaeological landscape research tries to recover as great a number of sites as possible. Moreover, the site concept may vary according to research interests; therefore, 'general' comparisons of site-densities between projects, and especially if they belong to different traditions, do not actually say much about the intensity of human activity in the past. However, rough estimates of site densities in the various traditions, give us an idea of the amount of area and sites that have been explored and clarify further their framework. The relationship between traditions regarding average site-density per km² is quite expected: CH and HG discuss sites over very large areas, even though from a very different perspective. LT and TT study much smaller spatial grounds. Furthermore, it is interesting to note the immense impact specific projects may have, in this case Pseira and Hood Knossos, as a result of a different concept of site. The problem of integrating site data in inter-regional comparisons is indeed clear. Range is a factor that indicates intra-tradition variability regarding estimates of site densities and gives us also an idea of differences between traditions. It is calculated as the result of MAX– MIN density per tradition. High Range represents the fact that within the same tradition there are projects providing a high site density and projects discussing fewer sites over larger areas (small site density). This may be a result of project scale, but what people call a 'site' also plays an important role.

Tradition	Average site-density in km²	Range
Culture History	0,473	2,216
Human Geography	0,062	0,084
Landscape Tradition	18,776	178,707
LT without Pseira project	5,308	16,202
Topographic Tradition	15,308	36,921
Topographic without Hood Knossos	4,362	8,165
Travellers	0,010	

Table 4.9.1 Average site-density per tradition: sum of projects' densities divided by number of projects within the tradition; Range as a comparative factor of intra-tradition variability (MAX-MIN density per tradition).

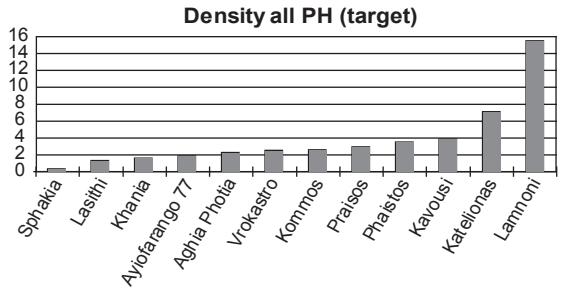
Site-densities are the most important result and interpretative tool of regional surface surveys. They have traditionally been used to support interpretative schemes of social evolution and form the basic theme of comparisons between different periods within the same region, and among projects and therefore regions. However, such comparisons may be extremely problematic; the only way to arrive at meaningful conclusions is to know what densities we compare and to use projects, which have used the term site in similar ways. *Table 4.9.2* shows how different results we may get in inter-regional comparisons of site densities (usually implying population densities) for the PH, depending on what calculations we use. The use of both certain and questionable or just certain chronological characterisations may also influence our conclusions, even if in general, the relationship among most projects remains unchanged. Projects in bold characters highlight differences in their relationship (which project shows a higher density), depending on whether we use only certain definitions or not. However, differences in inter-regional comparisons of habitation intensity are much greater depending on whether we calculate densities upon target population, sampled or the area actually seen. In fact, discrepancies are indeed great, even more so between target population, which is what has been traditionally used, and area actually seen[1], which is what should be used, depending on site-size. Patterns are almost totally different. Pseira of course consistently exhibits the highest density, but in fact its sites often do not consist of concentrations, but they may be the presence of even one sherd, and as it studies a

1 Appendix two, table 'fieldmethods-sampling': it is explained how the area actually seen is estimated.

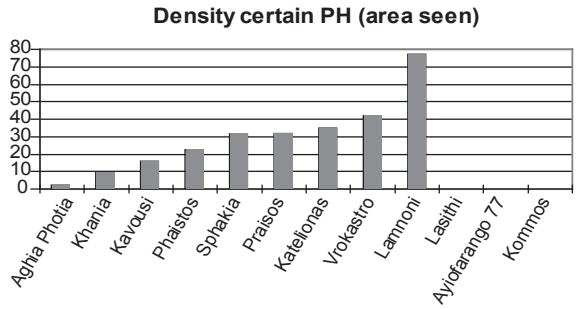
unique agricultural landscape recording every terrace, it can not actually be used for any meaningful density comparisons with other projects. *Graphs 4.9.1 – 4.9.6* show two versions of the relationship between projects in terms of which ones have higher densities. We can compare densities between the most general calculations (both certain and uncertain characterisations for the target population) and the most specific ones (only certain characterisations for the area actually seen) for PH, GR, and BVT. Pseira has not been included in PH and BVT because of its very large number of sites, whereas Lasithi, Ayiofarango and Kommos have not provided the necessary information for the estimation of the area actually seen. In general terms we have enormous discrepancies, e.g. Sphakia. It is evident, thus, that we need to rethink our inter-regional comparisons. In reality of course, the problem of site definition amplifies the problem of inter-regional comparisons even further.

Density all PH (target)		Density certain PH (target)		Density all PH (sampled)		Density certain PH (sampled)	
Sphakia	0,270	Sphakia	0,266	Lasithi	1,271	Lasithi	1,208
Lasithi	1,271	Lasithi	1,208	Ayiofarango 77	1,800	Ayiofarango 77	1,600
Chania	1,550	Chania	1,503	Chania	1,815	Chania	1,760
Ayiofarango 77	1,800	Ayiofarango 77	1,600	Hagia Photia	2,222	Hagia Photia	2,222
Hagia Photia	2,222	Hagia Photia	2,222	**Phaistos**	3,455	**Kommos**	3,314
Vrokastro	2,480	**Kommos**	2,320	**Kommos**	3,600	**Phaistos**	3,409
Kommos	2,520	**Praisos**	2,444	Kavousi	3,810	Kavousi	3,667
Praisos	2,889	**Vrokastro**	2,460	Praisos	5,200	Praisos	4,400
Phaistos	3,455	Phaistos	3,409	Sphakia	5,404	Sphakia	5,319
Kavousi	3,810	Kavousi	3,667	Vrokastro	6,150	Vrokastro	6,150
Katelionas	7,042	Katelionas	7,042	Katelionas	7,042	Katelionas	7,042
Lamnoni	15,385	Lamnoni	15,385	Lamnoni	15,385	Lamnoni	15,385
Pseira	174,286	Pseira	174,286	Pseira	174,286	Pseira	174,286
Density all PH (area seen)				Density certain PH (area seen)			
Lasithi	0,000	Sphakia	32,439	Lasithi	0,000	Sphakia	31,928
Ayiofarango 77	0,000	**Katelionas**	35,211	Ayiofarango 77	0,000	**Praisos**	33,033
Kommos	0,000	**Praisos**	39,039	Kommos	0,000	**Katelionas**	35,211
Hagia Photia	2,222	Vrokastro	41,333	Hagia Photia	2,222	Vrokastro	41,000
Chania	9,412	Lamnoni	76,923	Chania	9,128	Lamnoni	76,923
Kavousi	15,873	Pseira	580,952	Kavousi	15,278	Pseira	580,952
Phaistos	23,030			Phaistos	22,727		

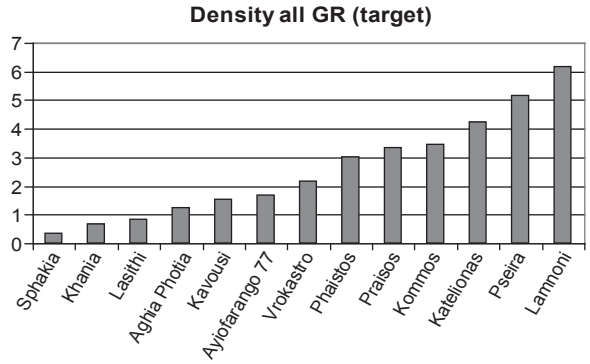
Table 4.9.2 PH site densities per km² of LT projects: the density of a project varies, depending on whether calculated upon target population, sampled population or area seen (compare the order of the projects among the three categories). Site density among projects also varies depending on whether both uncertain and certain chronological characterisations are used (all PH), or only certain ones (certain PH) as shown in projects with bold characters.



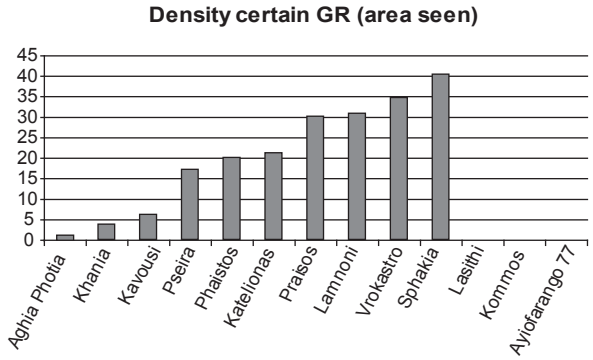
Graph 4.9.1 Site densities of all PH characterisations per project calculated upon the area of the target population



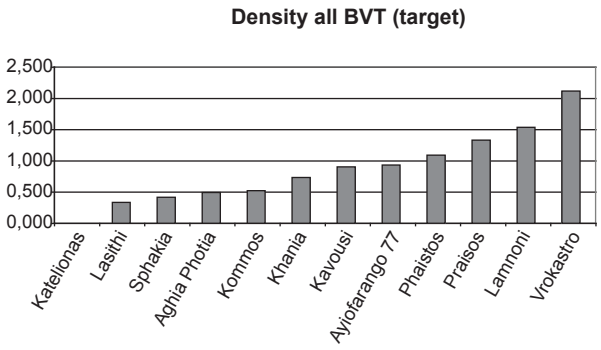
Graph 4.9.2 Site densities of only certain PH characterisations per project calculated upon the area actually seen



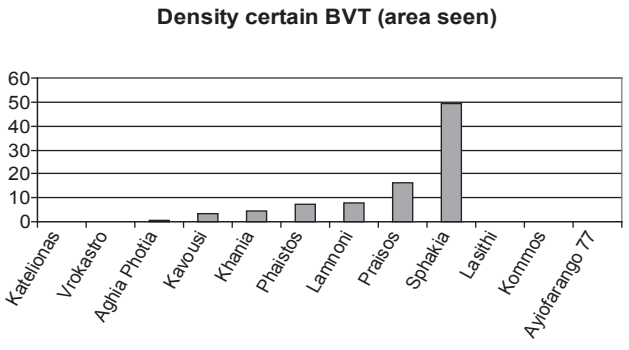
Graph 4.9.3 Site densities of all GR characterisations per project calculated upon the area of the target population.



Graph 4.9.4 Site densities of only certain GR characterisations per project calculated upon the area actually seen



Graph 4.9.5 Site densities of all BVT characterisations per project calculated upon the area of the target population.



Graph 4.9.6 Site densities of only certain BVT characterisations per project calculated upon the area actually seen

4.10 Discussion: Evaluation of Comparability

Based on various analyses, intra- and inter-project comparisons, we can make observations that illuminate the framework of archaeological landscape research on the island of Crete over time. It is apparent, that even though projects have their own identity, we can also identify trends specific to particular traditions. At the same time, there is a remarkable interplay among traditions, as researchers may use a big and variable body of theoretical developments and receive influences from older and contemporary colleagues, whether consciously or unconsciously. Thus, CL and the TT have developed in close association, while HG exhibits important similarities (research themes), but also differences (methods and problem orientation) with both. LT has developed advanced methods in recording the landscape and focuses on ecology and themes of social complexity; however, there are evident roots in a CH framework, which has in fact shaped Cretan archaeology in general. They all share a strong systemic framework, with society studied as a group of subsystems and geography playing a leading role in the study of societal structure. Traditions demonstrate distinctive trends of interpretative and methodological approaches; however, they do not form playgrounds with impenetrable borders.

Furthermore, analysis helps us to assess interpretations and think about the usability of landscape research data. A most important realisation is that functions, as well as chronological characterisations are principally a result of research interests. Patterns of human activity could in fact differ if there was a common and consistent definition of specific functions that would guide interpretation. For example, there is quite a lot of fuzziness between sites of agro-pastoral activity and habitations, and the same is the case between habitations and settlements. Many sites can be of multiple functions even in the same period, and thus the function promoted depends on the researchers' specific interests, e.g. a defence site may at the same time be of permanent habitation, and most farms encompass both a habitation and an agro-pastoral use. Chronological patterns are also representative of the history of archaeological interest and intensity of research, e.g. the finer classification of human activity in the PH period almost by all traditions, is the result of an analogous interest for the Minoan past, which has encouraged relevant studies in greater detail.

Overall, we have a better-dated PH landscape with many settlements and habitations, even though the difference between the two is not always clear. LT stands out with its high percentages of habitations and agro-pastoral sites relevant to its focus on the agricultural landscape and small sites interpreted as 'farms'. The other 3 traditions focus on specific site-types. Human Geography discusses mainly settlements, while all of them show a high percentage of unknown and uncertain function. This is not only due to the difficulty in defining function, but also due to little effort in doing so. The GR landscape is in general less known and almost restricted to site interpretations of settlements by all traditions. The picture acquired for this period includes even a higher percentage of sites with an unknown or uncertain function. The BVT period has been studied mainly by LT, and again it is settlement and agro-pastoral activity that has been of major interest, but a high percentage of sites with an unknown function are also recorded. Doubts as to how successfully we can use chronological and function interpretations are augmented by the inherent ambiguity in talking of a PH, GR, or BVT landscape as these periods are too large slices of time, artificially created. Furthermore, densities, which form the basis for interpretative models, are much debatable as their calculation depends on crucial information, which unfortunately is often omitted from publication.

It is evident that results can not simply be taken as a true representation of the reality of human activity over time in a region, without considering foci of interest and priorities in dating. Some projects offer better possibilities for a meaningful integration of their results, while others provide only general characterisations. Data / interpretations can not be used in the same way, but according to their resolution and precision, as well as accuracy, which has to be evaluated. For example some people may record all ancient remains, but not try to be consistent or are not as interested in recovering a Byzantine landscape. Besides that, we should take into account knowledge gaps in pottery dating, which increase as antiquity lessens. Often, sites from different surveys can not be compared, e.g. Pseira can only be used as a source of information on the specific theme of Minoan agriculture, but its sites can not be compared with those of other surveys in terms

of settlement patterns; Lack of consistent site definitions, explanation of the function terms used and adequate documentation of field methods, make density comparisons rather meaningless. As a consequence, we need to be careful and clear on what data we use for inter-regional comparisons, recognising their potential and weaknesses. Finally, we need to acknowledge the importance of assessing the interpretative value of survey data and pursue publication clarity that will support meaningful integrations of regional and inter-regional data.