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# Landscape Notions among Greek Engineering Students: Exploring Landscape Perceptions, Knowledge and Participation

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**Abstract:** The objective of this paper is to explore and critically analyze the basic notions of landscape and their change through time, among Greek engineering students, from all academically formative years of their undergraduate studies, at the Technical University of Crete. Specifically, it probes into their perspectives vis-à-vis the landscape at large and their everyday-life landscapes in particular, regarding their landscape perceptions, behavior, and education. This study takes place in two stages (2012 and 2017) and is placed in the context of continued scientific investigation into the interrelationships of various “publics” with various types of landscapes and landscape development ideas, perceptions, and preferences—and specifically those professionals-in-the-making who are bound to become key future agents in Greek landscape stewardship. Our aims serve the European Landscape Convention’s purposes of landscape research, education, and awareness-raising; they also cater to the need for geographically targeted place-specific application of the European Landscape Convention (ELC). Our findings reaffirm widely and long-held landscape notions, emphasizing the natural, the visual, and the aesthetic in landscape perception and conceptualization, but also point to landscape education deficiencies in the Greek educational system. These constitute significant findings in the context of the country’s efforts to lay out the blueprints for its future landscapes, by contributing to Greek lay landscape awareness and conscience building, but especially by informing future landscape-related professionals.

**Keywords:** tertiary landscape education; landscape perception; landscape participatory practices; students; engineers; European Landscape Convention; Greece

## 1. Introduction

The fact that landscape means different things to different individuals and different groups of people is well known (Meinig, 1979 [1]; Zube et al., 1982 [2] (pp. 1–33); Lothian, 1999 [3] (pp. 177–198); Herzog et al., 2000 [4] (pp. 323–346); Daniel, 2001 [5] (pp. 267–281); Conrad et al., 2009; 2011 [6,7] (pp. 159–170)). Also well-established is the fact that landscape notions and preferences as such are likely to be both genetically and culturally construed (Appleton, 1975 [8]; Jackson, 1984 [9]; Livingston, 1981 [10]; Palmer, 1997 [11] (pp. 109–113); Cosgrove, 1998 [12]; Burton, 2012 [13] (pp. 51–71), Roe, 2014 [14]). More research, however, is necessary for these theoretical positions to be fully substantiated and specified in contemporary contexts, for them to be successfully implemented in relevant future landscape policymaking, integrative management, and participatory governance. This study is placed in this framework of continued scientific investigation into the interrelationships of various “publics” with different types of landscapes and landscape ideas, preferences, perceptions, etc. (Meinig, 1979 [1];

Burton, 2012 [13] (pp. 51–71)). This goal not only also serves the European Landscape Convention (ELC)'s purposes of landscape research, education, and awareness-raising, but also caters to the need for geographically targeted place-specific application of the ELC's contribution to the cause of the European landscape.

Based on its receptive, sensitive, and inclusive landscape definition—a ground-breaking approach, simultaneously nodding to pertinent scientific knowledge so far accumulated—the ELC points not only to the synthetic nature of landscapes both natural and human, but also to their geographical and areal articulation, to their unity and holism, and to their distinctiveness/character, and—most significantly—that they exist through human perception. Placing special weight on this latter landscape property, this study delves into the formation and differentiation of such perceptions and notions of landscape, among future landscape-related scientists and/or professionals, and explores the parameters that contribute to such formation and specialization.

The ELC is a concise, broadly applicable, and overarching set of consultation principles and guidelines to landscape stewardship and the very first such legal tool of its kind, at an international level. It is also valuable for re-affirming the essential interdependencies between landscape and people (Olwig, 2007 [15] (pp. 579–594), Dejeant-Pons, 2004 [16] (pp. 79–83), Tress and Tress, 2001 [17] (pp. 143–157)). For its implementation, the ELC presupposes, among its signatory member countries, societies of citizen awareness, sensitization, and participation in landscape matters. This prerequisite is probably its Achilles' heel, since not all European societies are equally committed to the ELC's goals and aspirations. Thus, the role of experts (scientists, professionals, policymakers, educators, etc.) in landscape-related fields, in awareness-raising, sensitizing, and training at all levels (lay, academic, or other) becomes crucial for the promotion and realization of pertinent landscape policy and practice. Such educated expertise requires relevant knowledge, skills, and scholarship, developed through a multidisciplinary study approach, in different stages of tertiary (technical and general/conventional) education.

In February 2010, via Law 3827/2010, Greece ratified the ELC (Florence 2000); since then, it has been called to implement it with the aid of a "Landscape Committee", institutionalized within the Ministry of the Environment, Energy, and Climate Change. However, such steps were soon frozen, with the advent of the current credit/economic crisis. Already suffering from a serious deficit in landscape planning, education, and lay conscience, Greece found itself in the precarious position of needing to pursue and apply landscape-oriented goals and spatial interventions, while faced with more pressing socio-economic priorities. In view of the country's ongoing need to reconfigure itself after "the crisis", this article proceeds to explore landscape ideas, perceptions, and practices among university students in those professions most directly related and actively involved in landscape-shaping, as key future agents in landscape stewarding, in the Greek context.

The objective of this paper, then, is to explore, record, and critically analyze some basic notions of landscape and their change through time, among Greek university students, from all academically formative years of their undergraduate studies, at the Technical University of Crete. Specifically, our research questions address their (a) landscape understanding, (b) landscape education, and (c) landscape involvement and practices. Coming from all over the country but studying at the Technical University in Chania, these students are viewed as a typical segment of the Greek university student population but considered to be more knowledgeable of and sensitive to such matters, on the basis of the subject matter of their specialization. For this purpose, this paper probes into all possible aspects of the trainees' (engineering students') relationship both to the landscape, in general, and to that of their campus, as well as to landscape education/training in the country. The study is undertaken in two steps to understand and hopefully begin to explain better deeply underlying issues, constraints, problems, but also potentials, towards developing a critical scientific basis and crucial lay conscience, necessary for the implementation of the ELC, in Greece. The paper proceeds from a theoretical investigation of landscape notions in connection with various "publics" and of such notions in the case of Greece, to the empirical survey, and closes with conclusions based on our research findings.

## 2. Theoretical Background

### 2.1. Landscape “Publics”, Landscape Notions: Multiple Interdependencies

In the social sciences, but also in all scientific fields pertaining to the landscape, the cultural constitution of the landscape has been steadily gaining ground (Zube et al., 1981 [18] (pp. 69–87); Nassauer, 1988 [19] (pp. 973–977); Cosgrove, 1998 [12]; Tress and Tress, 2001 [17]). In this broader and growing theoretical context, the landscape has been conceptualized as a literal or metaphorical image of the humanized environment (Sauer, 1925 [20] Daniels and Cosgrove, 1988 [21] (pp. 1–10); Cosgrove, 1998 [12]). “As a portion of land which the eye can comprehend at a glance” (Jackson, 1984 [9] (p. 3)), it has been widely viewed as representing both a medium and an outcome of human perception, experience, and action, where vision predominates (Lothian, 1999 [3] (pp. 177–198)), and people’s landscape notions and preferences for certain types and characteristics of landscape are largely culturally driven (Meinig, 1979 [1]; Jackson, 1984 [9]; Nassauer, 1988 [19] (pp. 973–977); Cosgrove, 1998 [12]; Burton, 2012 [13] (pp. 51–71); Roe, 2014 [14]; Burley & Machemer, 2016 [22]). Moreover, more-than-representational perspectives into landscape geographies have recently revisited humanist experiential notions of the landscape (Tuan, 1977 [23] (pp. 89–102)) and instigated more interactive ways of relating to it, at an individual level (Dewsbury et al., 2002 [24] (pp. 437–440); Lorimer, 2005 [25] (pp. 83–94); Wylie, 2007 [26]), cognitively, emotionally, and behaviorally.

Numerous studies have been carried out on people’s notions of and preferences for landscapes, laying out a more or less consistent pattern of lay landscape aesthetic preferences and conceptualizations (Zube et al., 1981 [18] (pp. 69–87); Purcell et al., 1994 [27] (pp. 195–209); Coeterier, 1996 [28] (pp. 27–44); Strumse and Hauge, 1998 [29] (pp. 1–16); Sevenant and Antrop, 2009 [30] (pp. 2889–2899)). It has been argued that people prefer certain types of landscapes, regardless of their cultural or personal predispositions and backgrounds (innate, even primordial, preferences). All in all, both subjective and objective qualities, as well as tangible and intangible dimensions, have been recognized in the landscape and infused in individual and group perception and cognition, not only culturally and experientially, but also very possibly genetically (Lothian, 1999 [3] (pp. 177–198); Herzog et al., 2000 [4] (pp. 323–346), Adevi and Grahn, 2012 [31] (pp. 27–49)). Recent research comes to reinforce previous findings, and the high degree to which the latter vary and are contingent on the cognitive, emotional, and behavioral ways of relating to landscape by “multiple publics” (Adevi and Grahn, 2012 [31] (pp. 27–49); Burton, 2012 [13] (pp. 51–71); Eder & Arnberger, 2016 [32] (pp. 555–568); Pecher et al., 2018 [33] (pp. 428–442)). Specifically, Mercado-Alonso et al. (Mercado-Alonso et al., 2018, [34]) stress the need for further research “in the field of landscape”, regarding perceptions and social valuations of landscape among and between various publics, as follows: “need to make a greater methodological effort to obtain valid information about people’s perceptions of landscape and the value they place on it, with results obtained in experiences in different countries” (2018, p 108).

As the ELC explicitly states, European signatory states undertake to establish and implement landscape policies aimed at landscape protection, management, and planning (Article 5b). However, the concept of “multiple publics” is reportedly rarely discussed or taken in consideration in policy making (Scott et al., 2009 [35] (pp. 324–397)), thus necessitating further research, in order to ascertain the weight and role of actors’, observers’ or stakeholders’ “positionality” and “situatedness” in landscape practice and theory. This study was undertaken to build on knowledge as regards human-landscape interrelations among “multiple publics”, as an effort to further elucidate the ELC’s definition of landscape as “perceived by people” (Article 1a).

The ELC emphasizes one other important basis of landscape knowledge and intervention, namely that of expert education, awareness-raising, and training. Specifically, it admonishes each signatory party to undertake to promote “training for specialists in landscape appraisal and operations; multidisciplinary training programs in landscape policy, protection, management, and planning for professionals in the private and public sectors and for associations concerned; and school and university courses which in the relevant subject areas, address the values attaching to landscapes and the issues raised

by their protection, management, and planning” (Article 6 A–B a,b,c) (our emphasis). Accordingly, our study targets the respective university student “public”, trained in the relevant subject areas in Greece, namely architecture, environmental engineering, production, and administration engineering, etc.—a task, to our knowledge, so far not yet fully carried out, as far as all aspects of landscape are concerned (Purcell et al., 1994 [27] (pp. 195–209); Sevenant & Antrop, 2009 [30] (pp. 2889–2899)). Few studies have so far involved experts’ knowledge (Rechtman, 2013 [36] (p. 276); Pratiwi et al., 2014 [37], Mercado-Alonso et al., 2018 [34] (p. 108)), not to mention knowledge of experts “in the making”. In a study of landscape perception among Greek elementary and secondary school students and teachers, Klonari et al. conclude with the need for more effective training in geographic education pedagogy, carrying a positive attitude towards the subject matter taught and possessing a sound awareness of the environmental concepts, values and issues (Klonari et al., 2011 [38] (p. 16)). We argue that such a finding directly applies to Greek tertiary-level landscape education, highlighting the significance of its content and teaching methodology, as well as educators’ personal involvement in the landscape cause. Before we delve into how this particular “public” relates to landscape, in their capacity as future educators, professionals/practitioners and policymakers, we first turn to the particularities of the Greek context, in order to set up the parameters of our research design.

## 2.2. Greece and the Landscape

Greece signed the ELC in 2000 and ratified it ten years later (Maria & Sifakis, 2012 [39] (pp. 201–208)). Notwithstanding the fact that in many European countries, national landscape initiatives have not yet been fully implemented (Wascher, 2001, [40] (pp. 129–138)), Greece finds itself in the unfortunate position of being behind most other European countries, as regards various landscape matters (Grenon and Batisse, 1989 [41]; Pettifer, 1993 [42]; King et al., 1997 [43]; Höchtl et al., 2007 [44] (pp. 1–6); Vogiatzakis et al., 2008 [45]). Provided that the main goal vis-à-vis the landscape, in contemporary European societies which have signed and ratified the ELC, is the latter’s full implementation, it becomes imperative to understand, assess, and amend relevant delays and other shortcomings of such process. As the ELC explicitly advocates, landscape education and training at all levels and by all involved parties, including the broader society, are crucial towards the fulfillment of the goal of ELC implementation in Europe. Thus, it is imperative that we take a closer look at landscape training, at the appropriate levels of our educational system (tertiary education) where such training is being undertaken, which is what this study purports to do. In Greece, it is engineers of various disciplines who almost exclusively undertake landscape interventions. No other concerted and systematic landscape education or training is offered at the undergraduate level; only landscape architecture degrees are offered at the graduate level.

The degradation and occasional destruction of the Greek landscape, throughout its history, have been attested to by several observers and scholars of the Greek landscape, over the past half-century (Terkenli, 2004 [46]; Louloudis et al., 2005 [47]; Stathatos, 2008 [48] (p. 30); Trova, 2008 [49] (p. 39); Papayiannis & Howard, 2012 [50]). Generally speaking, as regards the current state of affairs, systematic physical landscape planning interventions into the Greek landscape have been restricted to metropolitan and other urbanized areas and have predominantly been a long-standing tradition of the design sciences (Terkenli, 2011 [51] (pp. 121–144)). Mobilization in matters pertaining to the agricultural landscape in Greece has only recently been instigated, through European Union legislation and subsidized interventions (through the Common Agricultural Policy), enforcing rural landscape protection and preservation (Louloudis et al., 2005 [47]). Landscape science, research and professional practice have been slowly gaining ground in Greece, in recent years. More specifically, in the 1990s, Greek landscape science underwent a qualitative shift (Terkenli, 2004 [46] (pp. 277–288), 2011 [51] (pp. 121–144)) towards a more concerted, focused, and systematic occupation with landscape matters, at various levels, by several academic disciplines, researchers and practitioners (including landscape historians, rural sociologists, geographers, environmentalists, landscape architects, etc.) (Terkenli, 2004 [46] (pp. 277–288), 2011 [51] (pp. 121–144)). However, this shift has been characterized by its

limited and haphazard extent and impact on actual landscape problems and issues, not to mention the lack of its effective application in landscape policy.

Furthermore, public or private local/bottom-up interests, participation, and decision-making concerning the landscape have tended to be ill-informed, peripheral, or—more commonly—non-existent (Terkenli, 2004 [46] (pp. 277–288); Manolidis, 2008 [52] (p. 54)). Accordingly, landscape matters still. Much more so, under current crisis conditions, they remain under-prioritized and overwhelmingly dependent on top-down economic or political interests. Such facts and trends unfailingly characterize a people's and a state's priorities vis-à-vis their landscapes and these priorities are consequently engraved in the landscapes themselves. This fact illustrates the problematic relationship of Greeks with their landscapes, namely the lack of a collective lay landscape conscience (Terkenli & Pavlis, 2012 [53] (pp. 245–254); Pavlis 2012 [54]).

Obviously, the lack of a well-developed lay landscape conscience in Greece—as compared to other modern nation-states in Europe and beyond—is a cultural problem, and thus amenable only by sustained systematic effort in landscape training and education. If “conscience” is defined as the mixture of human perceptions, thoughts, and emotions, it presupposes the existence of an external world (Sutherland, 1989 [55]), through and because of which it is articulated. Landscape conscience, then, refers to the distinctive bonds (conscious or unconscious) that characterize individual and/or collective relationships with the landscape (Terkenli & Pavlis, 2012 [53] (pp. 245–254)). Such collective landscape awareness and conscience had slowly begun to develop in Greece, before the current socio-economic crisis (early to mid1990s), through domestic tourism (Terkenli 2011 [51] (pp. 121–144), 2014 [56] (pp. 282–293)). Greek urbanites were then starting to rediscover “landscape” and to (re)develop a countryside awareness (“return to nature”), propelled by a higher standard of living, aggressive advertisement/promotion of Greek destinations by the state and the supply side, and the combination of emerging alternative/special-interest forms of tourism, which led to the discovery by the Greeks of “long-weekend” tourism. Since the onset of “the crisis”, however, this trend has been greatly curbed, signaling or reflecting the overall retrenchment in all matters pertaining to landscape and the landscape cause, in the country.

### 3. Methods

Our study targeted landscape-related-sciences students' personal/subjective perspectives generally to landscape, as well as to their everyday-life campus landscapes and, specifically, their landscape perceptions, behavior, and education. We assumed that such a focus may provide insights as to the factors that lead to the development of ways of understanding and relating to the landscape among future Greek landscape experts, with a view also towards the implementation of the ELC in Greece. For this purpose, we investigated the ways in which students of all departments at the Technical University of Crete conceive of, understand, behave, and develop preferences to landscape. More specifically, our research questions were formulated as follows:

1. Investigation of the students' landscape notions (definition and perception of landscape, landscape-making, landscape specification, etc.)
2. Investigation of the students' landscape education (existence and significance of landscape-related courses) and
3. Investigation of the students' involvement in the landscape (characterization of their campus landscape and willingness to participate in its improvement and future re-planning).

The study was conducted in two stages: the 1st survey took place during the fall and spring semesters of the academic year 2011–2012, while the 2nd one did so during the spring semester of the academic year 2016–2017. The second phase of the research additionally served the purpose of a comparative approach in time, namely our investigation into changes in the students' knowledge and opinions, due to possible interventions of additional factors in-between the two phases (see survey questionnaire in the Supplementary Materials to this article). The Technical University of Crete (TUC) is

located at Akrotiri, Chania; the university campus comprises several buildings, constructed at different phases, since 1988, including buildings for each school, students' residences, a library, a student union, and sporting facilities. Between the two phases of our survey, seven new buildings were added for the needs of the School of Environmental Engineering and for additional student housing. Minimal landscaping has been undertaken; rather, the common grounds of the campus have been left to natural vegetation (mainly Mediterranean floristic types with the addition of a few bushes and trees), which by the second stage of our research, had grown and turned denser and wilder, while retaining a rather heterogeneous and haphazard character.

The study was implemented with the aid of a structured questionnaire (McNeill 1990 [57], Bechhofer and Paterson 2000 [58], Burns 2000 [59]) (Supplementary Materials to this article), tested through a pilot study and through landscape expert appraisal (Daniel 2001 [5] (pp. 267–281)). It included mainly closed-ended questions (yes-no, ranking, multiple choice and specified-answer questions) and very few open-ended ones (Bradburn et al. 2004 [60]). The collected data were analyzed statistically, using SPSS (Green et al. 2000 [61], Apostolakis et al. 2003 [62], Apostolakis & Stamouli 2007 [63]) and tested for face-value validity, while their reliability was assessed with the Cronbach alpha coefficient, and found to have a value of 0.8 (Cronbach 1951 [64] (pp. 297–334), Apostolakis & Stamouli 2006 [65]). Specifically, the questionnaire was distributed with the aid of random stratified sampling, to students of all departments of the TUC (all years of studies), thus establishing equal chance for participation in the sample by the total student population of the campus. The statistically representative sample consisted, each time, of about 300 students out of the 2500–3000 student population of the Chania Campus. The sample strata were the school's departments; the data were calibrated for schoolyear and department population. The response rate was 100%, as these questionnaires were implemented in the context of the student's courses. For the results to be more easily assessed, the answers in the questionnaire were coded in accordance to the different landscape aspects (perception, knowledge, participation, etc.), as conceptualized in our study.

The questionnaire comprised of four sections. The first section contained questions of a demographic nature (gender, department, year of studies, place of residence and financial situation); the second section referred to the students' knowledge of the landscape concept (landscape definition, perception, constitution, specification, etc.); the third section addressed tertiary-level landscape education (landscape-related courses taken by the students and the context of such offered courses, as well as the students' opinions as to the significance and type of such courses in university curricula); and the final section referred to the landscape of the TUC (the students' characterization of this landscape and their intention to participate in future interventions towards its planning or improvement).

In our statistical analysis, percentages (of occurrences) were mainly used for the categorical or dichotomy variables. In addition, for the examination of a possible relation (independence) between two categorical variables, the chi-square test was used (with a level of significance  $\alpha = 0.05$ ). The findings of our statistical analysis are presented below, grouped into two categories: (i) response frequencies on tested variables and (ii) cross-tabulations of such variables with demographic data—in order to explore how demographic factors may relate to students' understandings of landscape constitution and perception, knowledge, education, participation, etc.

#### 4. Results

The sample size of the 1st stage was 333 students (187 male and 146 female), while that of the 2nd stage was 274 students (151 male and 123 female), of all years and departments: Electronic and Computer Engineering, Production Engineering and Management, Environmental Engineering, Mineral Resources Engineering, and Architectural Engineering. The 1st stage survey, coinciding with the peak of Greece's economic crisis, also yielded the following data: 64.5% of the sample declared urban residence, 27.2% declared semi-urban and 7% rural residence. As far as their financial situation is concerned, 6.6% of the sample declared mean annual household income smaller than 1000 EURO; 35.4% between 1001 and 2000 EURO; 39.1% between 2001 and 4000 EURO; and 18.9% over 4000 EURO.

Additional data on the students' income were not collected for the 2nd stage, since, due to the lasting economic crisis, such incomes remained, more or less, constant throughout our study.

#### 4.1. Landscape Knowledge and Perception

The answers to the first four questions of our questionnaire: (i) what is your first thought when you hear the word "landscape"? (ii) through which human senses is landscape perceived (iii) in your opinion, what does the word landscape refer to most? (iv) do you consider these as landscapes or not? (6 choices), are shown in Table 1 below.

**Table 1.** Greek engineering students' landscape perceptions (1st and 2nd research stages).

(I) "What is your first thought when you hear the word 'landscape'?"	1st Stage	2nd Stage	(II) "Through which human senses is landscape perceived?"	1st Stage	2nd Stage	(III) "In your opinion, what does the word 'landscape' refer to most?"	1st Stage	2nd Stage	(IV) "Do you consider these as landscapes or not?"	1st Stage	2nd Stage
	nature-natural environment	55.9		44.7	sight		99.1	98.9		the countryside	82.6
image-view-painting	21.9	10.7	hearing	63.1	58.2	the sea	77.1	82.7	a vineyard	37	40.8
built/urban environment	3.5	3.3	smell	62.5	57.1	mountains	80.1	82.3	old town	65.7	73.5
aesthetic properties	8.7	12.7	touch	46.8	44.3	the forest	75.8	81.2	burned forest	55.6	63.2
surroundings	4.9	9.4	taste	34.7	35.5	the village	68.5	73.4	square at peak time	49.1	51.5
place-space-locale	5.2	19.3				the city	59.9	69.7	other	41.7	48.2
						other	1.5	0.7		20.1	2.6

In the remainder of this section, the numbers/percentages inside the parentheses usually refer to the results of the 2nd stage and are presented next to those of the 1st stage.

As is evident on Table 1, each time, nearly half of the interviewees considered the landscape as "nature/physical environment". Furthermore, as might have been expected, almost all of them, in both research stages, stated that the landscape is perceived at least with the aid of vision (question II).

The respondent's department (school) correlated (statistically significant percentage difference) with the respondent's landscape perception ( $p$ -values 0.0031 and 0.0107 for the 1st and 2nd stage respectively): 45% (39.7%) of Architectural Engineering students considered landscape as "nature-natural environment", as opposed to 69% (50%) of Production/Administration Engineering students.

As far as "the constitution of landscape" is concerned, 39.3% (41.7%) of the respondents suggested that landscape comes into being through simple observation and 58% (56.1%) through both observation and participation, whereas 2.8% (2.2%) chose to answer that they did not know. However, landscape constitution seemed to be correlated with respondent gender, year of study, and type of place of residence. Specifically, more female students, 67% (60.7%), answered that landscape is constituted through both observation and participation, in contrast to 48.6% (52.3%) of male students. Surprisingly, fewer respondents in their third or higher year of study (47%) quoted this answer, as opposed to 1st- and 2nd-year students (66%) ( $p$ -value = 0.001, 1st stage). This correlation for the 2nd stage (60.7% and 52.3% respectively for the 1st and 2nd year students as opposed to respondents in their 3rd or higher year of study) is not statistically significant, possibly due to the development of more sophisticated and intellectualized notions of space and landscape with age and possible increased knowledge. During the intervening years between our two stages of research, no landscape-related governmental policies or laws, educational campaigns, or shifts in primary or secondary education curricula were effectuated in the country.

Also, depending on their place of permanent residence, smaller percentages of the sample's students suggested that landscape comes into being just through simple observation (41.5% of those living in urban areas, 30.1% of those living in semi-urban areas and 40% of those living in rural areas).

Next, seven (7) different landscape options were presented to students, asking them "whether they considered these as landscapes or not" (see Table 1, above). The positive answer percentages here were much lower than the ones above (question III), once more linking landscape with nature or the natural environment. Most students of our sample, namely 70% (68.1%), answered that *landscape is "tied to*

*cultural traditions*”, 23.9% (23.8%) of them answered that they disagreed with this statement, whereas 6.1% (8.1%) said that they did not know.

The stated belief that landscape is tied to cultural traditions seemed to correlate with the students’ year of study, department, and place of permanent residence. The majority of 1st- and 2nd-year students, 65% (67.6%), stated that they believe so, whereas an even higher majority, namely 75% (70.3%), of higher-year students stated so. Students of most departments also said they believed so (Environmental Engineers 65% (68.3%), Electronic and Computer Engineers 66% (59.6%), Production and Administration Engineers 77% (75.8%) and Architectural Engineers 80% (73%), as opposed to Mineral Resource Engineers, 45% (64%) ( $p$ -value = 0.0001, 1st stage)). This correlation is not statistically significant for the 2nd stage of the research survey, perhaps because of further landscape sensitization/education.

Moreover, landscape was considered to be tied to cultural traditions by 72% of our sample’s students who live in urban areas, 65% of those who live in semi-urban areas and 72% of those who live in rural areas ( $\chi^2 = 11.946$ ,  $p$ -value = 0.018).

Taking this line of thought one step further, 70.4% (76.5%) of the interviewees declared that *even when there is human intervention in a natural landscape, the latter does not cease to be a landscape*. Correspondingly, only 25.3% (21.3%) of the total sample responded that “such interventions ‘spoil’ the landscape”, while 4.3% (2.2%) said that they did not know. This stated belief seems to differ in a statistically significant way, depending on the place of residence ( $\chi^2 = 10.292$ ,  $p$ -value = 0.036) and mean annual family income. Specifically, low percentages of students of different places of permanent residence declared so (20% of those with urban residence, 33% of those with semi-urban residence and 40% of those with rural residence). Similarly, low percentages of our sample’s students declared that even when there is human intervention in a natural landscape, the latter does not cease to be a landscape, in correlation with their family income: 36% of those with a family income lower than 1000 EURO, 25% of those with a family income between 1000–2000 EURO, 18% of those with a family income between 2000–4000 EURO and 35% of those with a family income of more than 4000 EURO.

Also, 74.5% (81.2%) stated that they believed there are beautiful landscapes, 44.2% (38.4%) that there are ordinary landscapes; 20.9% (25.1%) that there are indifferent landscapes; 27.1% (28%) that there are degraded landscapes; only 24% (35.4%) mentioned ugly landscapes, while 8.7% (4.4%) offered some other response.

Furthermore, in answer to the question as to “*whether they use the word landscape much in their vocabulary*”, an unsurprising 4 out of 10 i.e., 43.1% (46%) stated that they do (in contrast to the remainder of the sample, 56.9% (54%), who do not do so often).

Those who answered the last question positively were further asked to give *examples of one literal and one metaphorical use of the word landscape*. These examples are shown on Table 2 below.

**Table 2.** Literal and metaphorical uses of the word landscape by Greek engineering students (1st and 2nd research stages).

Literal Use	1st Stage	2nd Stage	Metaphorical Use	1st Stage	2nd Stage	There Are	1st Stage	2nd Stage
Beautiful landscape	38.9	42.6	Landscape and economy	6.5	5	Beautiful landscapes	74.5	81.2
Natural landscape	19.4	20.2	Landscape and politics	15.1	10	Ordinary landscapes	44.2	38.4
Urban landscape	4.4	8.5	Hazy landscape	10.1	15	Indifferent landscapes	20.9	25.1
Ugly landscape		0.8	Clarifying the landscape	10.8	10	Degraded landscapes	27.1	28
View and landscape	12.8	18.6	Beautiful landscape	6.5	5	Ugly landscapes	24	35.4
Other	21.1	9.3	Dark (colored), dim landscape	5	5	Other	8.7	4.4
			Pleasant, peaceful landscape	3.6	10			
			Other	42.4	40			

#### 4.2. Landscape and Education

Our research findings show that more than 6 out of 10 students i.e., 62.1% (63.8%) have never been taught any courses related to landscape. Among those that have been taught courses related to landscape (Table 3) 37.9% (36.2%), 30.3% (27.2%) responded that they had been taught such courses during their secondary education, 2.8% (2.3%) during their post-secondary education, 14.5% (29.1%) during their tertiary education and 4.4% (1.5%) elsewhere. For instance, indicative landscape-related courses in the Department of Architectural Engineering were: Topography Surveying (compulsory, 1st and 4th semesters); Introduction in Landscape Architecture (compulsory, 4th and 5th semesters); Protection and Promotion of Architectural Sites and Monuments (elective, 7th semester).

**Table 3.** Importance of landscape courses taught, according to Greek engineering students (1st and 2nd research stages).

"Have you ever been taught any courses related to landscape?"			When/Where (during)			"Do you think that it is important for an Engineer to be taught courses relating to landscape?"			The Courses Consist of ...		
	1st Stage	2nd Stage		1st Stage	2nd Stage		1st Stage	2nd Stage		1st Stage	2nd Stage
yes	62.1	63.8	secondary education	30.3	27.2	yes	78.7	83.5	case studies	72.3	66.8
no	37.9	36.2	post-secondary education	2.8	2.3	no	21.3	16.5	theory	17	18
			tertiary education	14.5	29.1				theory and exercises	14.5	27
			elsewhere	4.4	1.5				other content	12	

When asked *whether they thought it was important for an Engineer to be taught courses relating to landscape*, most of the interviewees 78.7% (83.5%) answered positively (Table 3). Most supportive of this importance were female students (88%, as opposed to male at 78.7% for the 1st stage and 92.6% female as opposed to 76% male students for the 2nd stage) ( $\chi^2 = 13.318$ ,  $p$ -value = 0.000 and  $\chi^2 = 13.143$ ,  $p$ -value = 0.000 for each one of the stages respectively), first-year students (86.5%, as opposed to 2nd and higher-year students, at 70.5%) and Architecture students ( $\chi^2 = 41.423$   $p$ -value = 0.000). In the 2nd phase of the research survey, Architecture and Environmental Engineering students (94.6% and 95.1% respectively) state that they consider it important for an Engineer to be taught courses on the landscape, as opposed to 55.1% of the School of Electrical and Computer Engineering. This finding indicates a clear increase in landscape sensitization among students of disciplines more related to the conventional notions and understandings of landscape, such as architecture ( $\chi^2 = 41.423$ ,  $p$ -value = 0.000).

In an attempt to ascertain the reasons behind the respondents' answers to the latter question, they were additionally asked "why they considered it important or not for an Engineer to be taught courses on the landscape" (2nd stage of the survey) and their responses were as follows (Table 4):

**Table 4.** Reasons for the importance of landscape courses taught, according to Greek engineering students (2nd research stage).

that all their work related to the landscape	36%
to protect the landscape/environment, one ought to be sensitized about it and such knowledge is personal or that this is simply useful knowledge	20%
	10%

Moreover, most students 72.3% (66.8%) stated that they would like such courses to consist of case studies and much less to comprise of theory or theory and exercises, at 17.% (18%) and 14.5% (27%), respectively, while 12% said they would prefer some other course content. Specifically, 31% (24.6%) of them preferred such courses during their 1st or 2nd year, 12.9% (21.1%) during their 2nd or 3rd year, 10.2% (38.2%) during their 4th or 5th years and 5.4% (16.1%) every year of their studies.

### 4.3. Landscape and Public Participation

In an attempt to ground our findings on more concrete landscape cases and on the students' landscape values and habitual or professed relationship with landscape, the final part of the questionnaire dealt with students' characterization of their campus landscape and with their participation in landscape matters (Table 5).

**Table 5.** Greek engineering students' opinions on Campus landscape and participation in Campus re-planning (1st and 2nd research stages).

Students' opinions about their Campus landscape	Do you consider landscape knowledge important, overrated, or a luxury for an Engineer?		Would you participate in future re-planning?					
	1st Stage	2nd Stage	1st Stage	2nd Stage				
attractive	43.2	57.2	important	59.8	64.3	yes	72	72.7
very attractive	5.6	8.1	overrated	5.6	3	no	27.3	28
ugly	15.4	6.3	luxury	10.8	8.4			
very ugly	3.7	0.7	None of the above	19.8	17.9			
indifferent	32.1	24	All the above	4	6.5			

The first question investigated "students' opinions about their campus landscape", with mixed results. During the 1st stage of their research survey, about half of the student sample declared that they found it attractive or very attractive (43.2% and 5.6% respectively), while the other half declared it to be indifferent, ugly, or very ugly (32.1%, 15.4% and 3.7%, respectively). During the 2nd research stage, they said that they found it attractive or very attractive (57.2% and 8.1% respectively) and 24%, 6.3% and 0.7% indifferent, ugly, or very ugly, respectively). Students' characterization of the campus landscape seems to correlate with their year of studies, with their department ( $p$ -value = 0.0081 and  $p$ -value = 0.0043 for 1st and 2nd stage respectively) and with their family income ( $p$ -value = 0.029). On the one hand, 29.4% of students in their first and second years of study and 37% of those of higher years responded that they find their campus landscape indifferent. On the other hand, 41% (64.5%) of Environmental Engineers, 36% (48.1%) of Electronic and Computer Engineers, 51% (75.8%) of Production and Administration Engineers, 28% (45.9%) of Architectural Engineers and 53% (62%) of Mineral Resource Engineers responded that they found their campus landscape attractive. Finally, 25% of the respondents with family income up to 1000 EURO, 42% of those with family income between 1000 and 2000 EURO, 39% of those with income between 2000 and 4000 and 54% of those with income over 4000 EURO also reportedly found it attractive.

As concerns their "reasons for their characterization of the landscape of the Polytechnic School of Crete", their answers for the 2nd stage of the research survey are distributed as follows (Table 6):

**Table 6.** Greek engineering students' reasons for their characterization of the Campus landscape (2nd research stage).

Beautiful vegetation/Nature	20%
Degraded/untidy (spray-graffiti-damaged)	15%
Mountain-sea combination	12%
Bad planning (structures, functions, lack of harmony with nature)	10%
Beautiful view	10%
Good combination of nature with modern architecture	10%
Well-preserved, beautiful	10%

In the 2nd stage survey, a large percentage (80.7%) of the interviewed students surprisingly declared that the campus was an unknown landscape to them. In assessing the changes to this landscape, since the 1st stage of this research (6 years before), the majority stated that there had been no change or evolution, relatively to the 1st stage.

When asked "whether they considered landscape knowledge important, overrated, or a luxury for an Engineer", most respondents, namely 59.8% (64.3%), answered positively (important knowledge),

5.6% (3%) considered such knowledge overrated, 10.8% (8.4%) as luxury, 4% (6.5%) all of the above and 19.8% (17.9%) none of the above. The answers to this question correlated with a statistically significant degree with the variables student gender ( $\chi^2 = 11.199$ ,  $p$ -value = 0.048 and  $\chi^2 = 37.037$ ,  $p$ -value = 0.000 for the 1st and 2nd stage respectively), place of permanent residence ( $p$ -value = 0.001), year of study ( $p$ -value = 0.006 and 0.0032 respectively) and academic department ( $\chi^2 = 78.146$ ,  $p$ -value = 0.000). For instance, 62% of those students who lived in urban areas, 57% of those who lived in semi-urban areas and 26% of those who lived in rural areas said that they considered such knowledge essential for engineers. 52.4% (48.3%) of the interviewed male students and 65% (83.3%) of the interviewed female students answered that they considered this knowledge a necessity. Among all students of the 1st and 2nd years of study 67% (55.1%) and among all students of higher years of study, 47.2% (73%) answered that they considered this knowledge a necessity. As concerns the different Departments of the Crete Polytechnic School, the percentages of students of both genders who declared, during the 2nd stage of the research survey, this knowledge a necessity were as follows: School of Architecture 86.3%, School of Environmental Engineering 71%, School of Production and Management Engineering 61.3%, School of Mineral Resources Engineering 55.1%, and School of Electrical and Computer Engineering 34%.

In response to “why they considered this knowledge a necessity”, they offered:

- (I) Environmental sensitization (protection-respect towards the environment) 18%
- (II) Important knowledge 8%
- (III) Useful-necessary knowledge, since all of us live in the environment 16%

As to “whether they would participate in future re-planning or improving their campus landscape”, the majority that is 72% (72.7%), showed positive intentions. However, female students declared to be more inclined to do so ( $\chi^2 = 18.997$ ,  $p$ -value = 0.000 and  $\chi^2 = 5.867$ ,  $p$ -value = 0.015 respectively for each one of the stages), students of urban permanent residence ( $\chi^2 = 13.927$ ,  $p$ -value = 0.008), Architectural Engineers ( $\chi^2 = 25.251$ ,  $p$ -value = 0.000, 2nd stage) and first- and second-year students of all departments ( $p$ -value = 0.000, 1st stage). For example, 60% (66.7%) of the male students and 81% (80%) of the female ones respectively would participate in such an effort. Also, the students of the 1st and 2nd years of study seem to be more willing to participate in any future endeavors of improving or re-planning the campus landscape, in contrast to those of higher years of study, by 82.7% (69.1%) and 53.6% (76.3%), respectively. This difference is not statistically significant for the 2nd stage ( $p$ -value = 0.2011), probably due to their more integrated education.

Moreover, 96% (87.5%) of all students of the School of Architecture, 73.3% (83.3%) of those of the School of Environmental Engineering, 66.7% (71%) of the School of Production and Management Engineering, 68% (59.2%) of the School of Mineral Resources Engineering, and 39.4% (53.8%) of the School of Electrical and Computer Engineering would reportedly participate in such an endeavor. Finally, 72.9% of students of both genders and of urban permanent residence, 69.9% of those of semi-urban permanent residence and only 43.5% of those of rural residence would be willing to participate in such future endeavors.

In response to the final, open-ended question “what else do you consider important, concerning the campus landscape, or landscape in general?”, the students offered a series of comments and observations, which may be summarized as follows. Several of them stated that they thought their campus landscape to be a beautiful landscape, at a wonderful location, featuring good infrastructure, a satisfactory combination of greenery and modern architecture and in no need for any future change. However, another large number of students said that they believed that this landscape needed further care and management, i.e., care for and conservation of unused/unexploited infrastructures (e.g., of the campus swimming installation), construction of new buildings (e.g., for the Architecture School) and of a park, better connection between the buildings, better signage and lighting, cleaning team efforts (e.g., removing graffiti and generally ameliorating the color palette of the buildings) and tending to the vegetation and greenery. In any case, our interviewees deem essential the forming of a team for re-planning and re-developing of the campus. Such a team would ideally be constituted by both

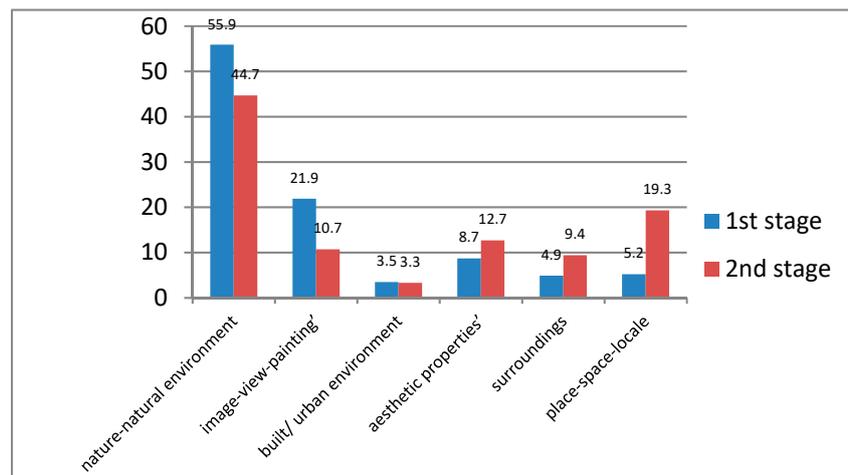
students and professors and would initiate a discussion towards the generation of ideas and proposals for the restitution and restoration of the campus landscape. They also suggested that some of the unused/unexploited spaces could be the object of student study and research.

In closing, the students offered some final general personal opinions about the landscape, ranging from sensitive and pragmatic to idealized and abstract: “every landscape has its own beauty, from which humans derive peace and calm”; “the environment requires stewardship, as it represents an indispensable part of everyday life and of the realm of art”; “its protection is essential, since we must not intervene in it in any dramatic or definitive way”; “it would be advisable to respect it and treat it with delicate and careful interventions, in order to allow it to narrate its history”; “every landscape figures some worthy and attractive qualities for our appreciation, without it ever becoming either boring or overbearing”.

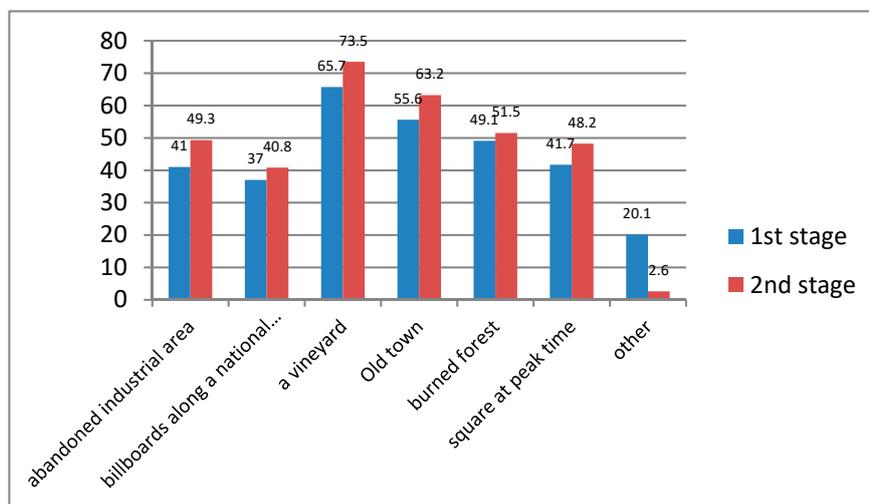
## 5. Discussion

Landscape knowledge and understanding lie at the basis of ELC implementation and any landscape analysis or intervention, at large. For that purpose, we commenced our survey with an inquiry as to landscape perceptions and understandings among students of landscape-related academic formations. Not surprisingly, long-standing common-place landscape conceptualizations and broadly established landscape characteristics re-emerged as significant landscape signifiers: landscape as nature or natural environment (Purcell et al., 1994 [27] (pp. 195–2090; Herzog et al., 2000 [4] (pp. 323–346)); landscape as perceived primarily and overwhelmingly through the sense of vision (Bourassa, 1991 [66]; Lothian, 1999 [3] (pp. 177–198)) and landscape as constituted through observation (Jackson, 1980 [67] (p. 5); Tuan, 1979 [23] (pp. 89–102); Rose, 1996 [68] (pp. 341–350)). These ways of perceiving and understanding landscape in our research sample were verified by subsequent questions that emphasized landscape signifiers, such as “*what does the word landscape refer to most?*”, “*is landscape tied to cultural traditions?*”, and whether certain categories of non-conventional landscapes (i.e., burned forest, abandoned industrial areas, etc.) were considered to be landscapes or not, as well as in their literal landscape examples. Secondly, again, respondents’ landscape notions adhered to dominant landscape paradigms and conceptualizations in Western thought, such as the notion of landscape as a view and the aesthetic dimension of landscape (Lothian, 1999 [3] (pp. 177–198); Daniel, 2001 [5] (pp. 267–281)). The latter findings emerged from questions such as (a) “*what is your first thought when you hear the word ‘landscape’?*”; (b) what types of landscapes (beautiful, ugly, ordinary, impartial, etc.) they acknowledged and (c) their literal landscape examples.

The predominance, then, of the natural and aesthetic qualities in these students’ notions of landscape, as well as their stated belief that landscape becomes through observation, resonates with numerous landscape studies and research results, as well as widely held scientific convictions about landscape (Meinig, 1979 [1]; Tuan, 1979 [23] (pp. 89–102); Jackson, 1980 [67]; Rose, 1996 [68] (pp. 341–350)). Moreover, the ELC, which may have played a role in these students’ notions of landscape, states so clearly. Such findings only slightly change in the 2nd stage of our research; they are rather somewhat adjusted and balanced, vis-à-vis those of the 1st stage, pointing to trends of more developed, educated and well-rounded landscape-related notions and practices (Figures 1 and 2). More analytically, in the five years intervening between our two research stages, the interviewed students’ landscape notions of landscape have become more educated, nuanced, inclusive/comprehensive, balanced and indicative of an increased sense of consciousness and sensitization towards both landscape, in general, and their campus landscape, more specifically. Such findings accord with a general increase in the development of a lay environmental conscience in Greece in the past few years, generally speaking, a trend that is also demonstrated in the answers to certain questions of our questionnaire; the latter findings are more pronounced in the case of female students and those of an urban permanent residence. Furthermore, another emerging trend is a stronger sense of the aesthetic dimension of landscape (Figure 1), which seems to preoccupy these students increasingly positively in the 2nd stage of our research rather than in the 1st, and especially so the architectural students.



**Figure 1.** Greek engineering student landscape perception change, in answer to the question “what is your first thought when you hear the word ‘landscape’?”.



**Figure 2.** Greek engineering student landscape perception change, in answer to the question “do you consider these as landscapes or not?”.

We may postulate that our findings are grounded in the nature of the Greek landscape itself: the presence, side-by-side, of sea and mountain; the rural character of most of the land; and the omnipresence of cultural tradition and history, linking the present with the past, over a span of millennia, serve to impress such landscape characteristics and qualities in Greek notions of landscape. Although small in size, Greece is characterized by extraordinary landscape diversity and wealth, in terms not only of uniqueness but also cultural and historical depth. Not only is it one of the most mountainous countries of Europe, due to its young and especially active tectonic geomorphology, but it has an extremely long coastline (of approximately 15,000 km), while one quarter of its land area is in the form of islands. Moreover, its geographical location and transitional climatic conditions make for one of the richest floras and faunas in Europe, while its long history and traditions, since the antiquities, have been heavily, and often dramatically, imprinted in its landscapes. The character of the Greek landscape in these students’ minds seems to be so vivid and stable, as a result, that even the rampant urbanization occurring since the 1960s in the major Greek cities of Athens, Thessaloniki, Patras, Heraklion, etc. has apparently not altered their notions of landscape as nature and countryside. These findings are further reinforced and possibly explained by the fact that most of our sample’s students live in urban (64.8%) and semi-urban (27.2%) areas. Nor have such notions seemingly been affected by wide-spread tourism and other impacts of recent development on the land, which impinge on the natural qualities of

landscape. On the contrary, as has often been argued, landscape conscience develops or even emerges primarily among urban populations, as an antidote to conditions of urbanization itself (Stathatos 1996 [69], Bunce 1994 [70]).

The latter interpretation of our survey's findings is reconfirmed by the students' varied and strong opinions about their own campus landscape, indicating their controversial attitudes vis-à-vis the aesthetics of their everyday landscape. Interestingly, they re-affirmed that landscape does not cease to be, when humans intervene in it. In these ways, their landscape notions do not seem to differ from those of most other subjects of social scientific research in the Western context, where such anthropogenic landscape notions have long been consolidated (Cosgrove 1998 [12], Lorimer 2005 [25] (pp. 83–94), Conrad et al. 2009 [6]). On the other hand, our respondents' landscape notions further reaffirm widely held landscape conceptualizations and their aesthetic connotations (Lothian, 1999 [3] (pp. 177–198); Daniel, 2001 [5] (pp. 267–281)), by falling short of fully acknowledging as landscapes those that do not conform to the conventional norms of beautiful or somehow special-value landscapes. Such an outcome points to the fact that ELC landscape principles have probably not yet infiltrated Greek society, which once again shows that it has a long way to go, as regards ELC implementation (Terkenli, 2011 [51] (pp. 121–144)). In an attempt to understand notions of landscape in correlation with family income, it may be suggested that middle income categories seem to be more pre-occupied with practical matters of life and sustaining their standards of living, and may thus be more oblivious to landscape, than in the case of lower income class life (where landscape may play a more significant role for purposes of gaining one's livelihood from the land) or the more affluent classes (that may better afford the "luxury of landscape").

In accordance with conventional definitions of landscape (Adevi & Grahn 2012 [31] (pp. 27–49), Conrad et al. 2011 [7] (pp. 159–170), Lothian 1999 [3] (pp. 177–198)), the cultural dimension of landscape also ranked fairly high in students' understanding of the landscape, but was not as pervasive in their answers as the natural dimension. The lowest degree of well-rounded knowledge of the definition of landscape among students was found among Mineral Resource Engineers, as might be expected, due to lack of relevant education. On the contrary, as regards the more well-rounded constitution of landscape (through both observation and participation), students of lower years (1st or 2nd, as opposed to 3rd or 4th) indicated more integrated notions of landscape constitution. This finding cannot be explained by the amount of their landscape knowledge and education; perhaps it may be explained by the loss of a more instinctive and spontaneous, therefore well-rounded, interactive relationship to landscape, in the course of time and increasing sophistication, due to relevant formal education.

This brings us to the issue of landscape education, of utmost significance for the development of a lay landscape conscience, as also broadly implied in the ELC (Article 6, A and B). Our research findings also stressed the significance of such education and training, in the words of the future experts in this field, although, at this point, we would use caution in the interpretation of our results, due to interview survey biases (Weisberg H. F. 2005 [71]; Assael & Keon, 1982 [72] (pp. 114–123)). Firstly, most respondents claim that they have never been taught any courses pertinent to landscape. Those who answered positively have been taught about landscape, in the context of their secondary education—as opposed to tertiary education, which would have been expected, since these students' disciplines are those most related to landscape. This leads to an acknowledgment of the actual paucity of concerted, institutionalized landscape education (the Greek educational system and especially of curricula of pertinent tertiary education departments) (Terkenli, 2004 [46] (pp. 277–288), 2011 [51] (pp. 121–144)), despite the finding that there exists a ubiquitous understanding of landscape, among the interviewees.

Accordingly, the sample majority, although never taught any courses on landscape, acknowledges the importance of professionals—either in the private or in the public sphere—being taught such courses. In the respondents' views, an Engineer should be abreast and "in the know" of developments in Landscape Science—despite the fact that in actuality, they themselves seem to have incomplete landscape knowledge and limited training. Moreover, such knowledge should not just be theoretical,

but also carry empirical application, as befits its subject matter (namely the landscape) (Jackson, 1984 [9]).

Not surprisingly, of all our samples' strata according to department (school) of studies, architectural engineering students—holding higher standards of environmental aesthetics, since their training is most related to aesthetic theory and the arts—are the ones most critical of their campus landscape and uphold the natural dimension of landscape least of all. What is more surprising, however, is that the higher the respondents' family income, the more aesthetically pleasing their conception of the school's campus landscape—taking into consideration the latter's heterogeneous character, obviously detracting from its natural appeal. Certainly, the theory of the urban provenance of the origins of landscape conscience (Adevi and Grahn, 2012 [31] (pp. 27–49)) is supported by these findings, since students coming from other than rural areas appear to be significantly more landscape-minded than their rural counterparts. The latter do not consider landscape knowledge important, a finding that is in agreement with much previous research, indicating different notions of landscape carried by farmers and residents of rural areas (Adevi and Grahn, 2012 [31] (pp. 27–49); Burton, 2012 [13] (pp. 51–71); Herzog et al., 2000 [4] (pp. 323–346)). Obviously, more in-depth questioning and probing into the students' specific preferences, vis-à-vis their campus landscape, might yield more insights, on this matter.

Finally, most encouraging is their stated willingness to participate in actions of improvement or re-planning of this landscape, a willingness that probably illustrates the latter's perceived significance in their quality of life. Barring, of course, the possibility of biased answers (due to the suggestiveness inherent in all interviewing processes), our respondents indicate their interest in their everyday-life landscapes—such as their campus landscape—a finding that is promising for purposes of future lay participation in ELC implementation. The fact that this willingness was significantly stronger among female and lower-year students may either suggest that they carry a more pronounced and developed landscape conscience or that they are more prone to suggestiveness. Nonetheless, the fact that this interest rests on a deficient formulation of their landscape concept and perception remains disconcerting. So does our general conclusion that despite some small progress towards more well-rounded and educated landscape knowledge and ways of interrelating between the 1st and 2nd stages of our research survey, substantial change has not occurred, indicating that deeply held cultural notions are slow to change (i.e., landscape as beauty).

## 6. Conclusions

Besides exposing serious shortcomings in the current Greek tertiary education curricula, our research findings largely support findings of previous studies on landscape notions and preferences, even among a population where landscape conscience has been slow in developing (Terkenli, 2011 [51] (pp. 121–144); Papayiannis & Howard, 2012 [50]). Contrary to previous studies on students' notions of landscape (Sevenant and Antrop, 2009 [30] (pp. 2889–2899)), our results were consistent with long-standing and more recent theoretical landscape concepts (Meinig 1979 [1]; Zube et al., 1982 [2]; Rose, 1996 [68]; Burley & Machemer, 2016 [22]). Not only did the natural element (the countryside, the sea, the mountains and the forest) predominate, once again, in respondents' definitions of landscape, but so did also the aesthetic dimension and the delineation of landscape through vision (Bourassa, 1991 [66]; Lothian, 1999 [3]). Interestingly, however, our findings also support recent inroads in the conceptualization of landscape, as, for instance, the interactive character of the humans-landscape relationship, as advocated by more-than-representational geography (Lorimer, 2005 [25] (pp. 83–94); Wylie, 2007 [26]). In that respect, most students seemed to recognize the constitution of landscape through both observation and participation, upholding the significance of human involvement in it, possibly signaling the outset of the development of a landscape conscience among them. This finding is further strengthened by the higher percentages of "landscape-minded" responses received from respondents of urban or semi-urban residence, as opposed to those of rural residence. Such knowledge is obviously very significant in laying out the blueprints for our future landscapes.

With pressure mounting from international commitments i.e., to the ELC, or by ICOMOS, OECD etc. for landscape research, planning and policy initiatives, Greece is currently finding itself in a position of having a way to go in order to meet its own landscape problems and challenges and develop its own future landscape agenda (Jones & Stenseke 2011 [73]). By revealing both tertiary educational shortcomings and the significance of such landscape training and education, this study's results may thus prove very useful not only in aiding ELC implementation in the country, but also towards the development of Greek lay landscape awareness and conscience building (Dejeans-Pons, 2004 [16]; Pavlis, 2012 [54]). Based on the methodology used, this is obviously an exploratory survey, since it is limited to a statistical analysis mainly of a descriptive type. More in-depth and comparative research data will undoubtedly contribute to and inform landscape-educated planning and appropriate interventions, generally speaking: further study of other significant ways of human-landscape interrelating is essential, among various student categories of landscape-relevant professional formations, taking in consideration also their emotional/psychological connections to their subject matter (Tuan, 1979 [23]; Plutino, 2009 [74]). This undertaking will serve both purposes of personal awareness-raising and—especially—of the construction of more well-rounded and comprehensive landscape educational curricula, forming the basis of landscape training of future landscape scientists, educators and practitioners, in the country. Indeed, ELC's call for appropriate, all-level—both specialist and overarching—landscape training (ELC, article 6) has not yet been met in the least. Such training needs to address all aspects of the landscape, in the participatory and holistic (including perceptions, behaviors, preferences and knowledge) spirit of the ELC. Furthermore, sustainable landscape planning and management require well-informed, educated, and expert measures and interventions, tailored to the country's landscape particularities, problems, and prospects, as these have been analyzed in this study. In Greece, it is precisely engineers, generally speaking, who are professionally most connected to decision-making and intervening, when it comes to spatial and landscape planning and management. However, we believe that our study and its findings may prove useful also in other similar contexts, where there is a need for in-depth understanding and appropriate amendment of relevant tertiary educational practices and professional formation, intended for those who are bound to become key future agents in landscape stewardship. In the context of striving to uphold better life quality and circumstances, landscape education, encompassing both theory and practice, is perhaps the most crucial step towards investing in future landscape-making, management, use, and appreciation.

**Supplementary Materials:** Supplementary materials are available online at <http://www.mdpi.com/2073-445X/8/5/83/s1>.

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**Conflicts of Interest:** The authors declare no conflict of interest.

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