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TOWARDS A NEW ARCHITECTURE FOR THE SERVICE AREAS OF THE A22 MOTORWAY

Executive summary

Motorway service areas are generally seen as fast transit place, where to stop only if strictly needed. TNA(A22)MSA aims to propose an innovative vision for the transformation of the service areas along the Modena-Brennero motorway. By providing them with new facilities and opening towards the territory, the user base can be widened. While the debate was fostered by scholars recently, in the Italian context few pilot projects were realised: TNA(A22)MSA, through the collaboration with Autostrada del Brennero S.p.A., aims to provide an action plan workable already in the near future.

The challenge is duplex: to open the motorway to the territory (through intermodality and widening the user base) and to develop innovative technologies for the reduction of socio-environmental impacts. The project consisted of three steps. Firstly, we focused on learning the basic and fundamental theoretical knowledge about the current state of the art of the topic of service areas. Second, we conducted an interpretative process based on data collected in the previous phase; the approach started at this stage to be more project-based and practical as various maps and diagrams were produced to visualise the information more effectively. The third phase consisted in the finalisation of the work.

The deliverables were three. First, interpretative maps and diagrams to provide a complete knowledge framework. Second, a guidance document highlighting the key elements to consider when transforming any of the 22 service areas of the Brennero motorway, building a vision for the future of the motorway itself. Third, the project of three significant service areas assessed and put into practice the guidelines through real case studies. The three prototypes crystallise the project ideas in tangible artefacts such as plans, sections and 3D visualisations.

Key words

Architecture, landscape, motorway, service area, transition.



Image 1: logo.







Campogalliano Ovest / Est 1st territorial macro-section



Povegliano Ovest / Est 1st territorial macro-section



Nogaredo Ovest / Est 2nd territorial macro-section



Laimburg Est 2nd territorial macro-section



Plose Ovest / Est 2nd territorial macro-section

Trens Ovest / Est 3rd territorial macro-section

Image 2: comparative axonometries for the draft of the Systemic Guidelines.

Po Ovest 1st territorial macro-section



Garda Ovest / Est 2nd territorial macro-section



Paganella Ovest / Est 2nd territorial macro-section



Sciliar Ovest 3rd territorial macro-section



Plessi Museum 3rd territorial macro-section





Adige Ovest / Est 2nd territorial macro-section

1st territorial macro-section



Laimburg Ovest 2nd territorial macro-section



Isarco Est 3rd territorial macro-section

Project description written by the Principal Academic Tutor

TNA (A22) MSA develops a theoretical and practical research focused on the architecture of motorway service areas. The projectarises up-to-date considerations on the relationships between infrastructure, environment, landscape and territory, activating intersections with dynamic fields of knowledge: the study of ecological systems, energy resources, social communications. The potential beneficiaries are current and future motorway users, concessionary companies, companies offering services related to mobility.

In this framework, the project prefigurates formal, typological and technological scenarios capable of implementing practices complementary to mobility.

The leading case study is the A22 motorway, Brennero-Modena, built between 1960 and 1974. In this context, the new architecture of the service areas offers a twofold opportunity: to open the motorway to the territory; to arise very innovative technological contents.

By working on this subject, the project aims:

- to extend multi-modal practices to the entire system of slow and fast networks, amplifying the access of tangible and intangible heritage in the area crossed by the A22;
- to test some technological solutions suited to the ecological transition, in the short, medium and long term, promoting the hybridization between conventional and innovative uses.

According to its multidisciplinary vocation, the project focuses on some topics related to four main fields:

- *urban, interior and landscape architecture,* developing design solutions to interpret the relationship between the infrastructure and the physical and social context of the service areas and their surroundings;
- *ecological and environmental design*, promoting systemic integration between road infrastructure and soils at all scales of intervention;
- *energy engineering*, reflecting on the evolution of energy components related to transport systems and their influence (past, present and future) in the transformation of motorways;
- *management and information engineering*, interpreting the current modes of use of the motorway and predicting their evolution (e.g. sharing-mobility) in compliance with the rules governing safety and efficiency.

Team description by The TNA(A22)MSA team is composed of five students, all coming from the field of architecture. Motorway design was traditionally assigned to civil engineers, skill while recently new professionals were introduced to this domain: this resulted in a positive change in the point of view. According to the course of study, the team split in three sub-groups (two composed by a single member). Filippo Lorenzo Balma, Sara Marzio and Francesco Sordo studied architecture in their bachelor. Filippo is enrolled in the master "Architettura Costruzione Città", while Sara and Francesco are studying "Architettura per il progetto sostenibile". This slight difference in their field of study was fundamental in the realisation of the projects: Filippo is more concerned with wide scales, the other two gave a key contribution for the implementation of sustainable solutions in the service areas. Eleonora Dussin, the only member from PoliMi, is enrolled in the master "Product Service System Design" after having studied communication design in the bachelor. This two-sided knowledge allowed her to meet the requirements of the stakeholder, acting as hinge of the group. She contributed to the formalisation of the products and worked on the realisation of service analyses. Sebastiano Anselmo studied urban and territorial planning in both the bachelor and the master. He took charge of the wide scale maps, providing information which was used by both the architectural team to finalise the design and the designer to realise graphs and schemas.

The two one-member groups contributed to the realisation of the guidelines, working together on territorial and service aspects.

Goal

The project is pivoted on the service areas of the A22 motorway and their possible transformations. Nowadays they are considered as "non-places", where people stop quickly only when needed, a mere transit place; the aim was to find opportunities to turn them into "super places", areas to have a rest and take advantage of a wide set of services. These were to be found looking at both endogenous and exogenous factors, changing the traditional perspective for which the motorway is imposed on the territory: instead, our goal was to develop a vision for an A22 integrated with its setting, requiring therefore a trans scalar approach. The principal stakeholder is Autostrada del Brennero S.p.A., concession holder for the homonym motorway. They asked the team to realise a study in support of the future transformations, articulated in three sections. First, it was required to develop a guidance document which considers the whole motorway trunk; it had to point out the principal elements to recall when transforming the service areas, for making them more attractive, profitable and sustainable. Second, a design proposal for the transformation of three significant service areas, which were chosen in agreement with the stakeholder, was to be realised. They are

Campogalliano (Est and Ovest considered together), Garda (Est and Ovest considered together) and Sciliar Ovest: the first is relevant for the location and the dimensions, the second for the architectural heritage, the third for its territorial setting. In order to connect the guidelines and the projects, providing at the same time relevant information about the territorial setting, interpretative maps were required: these were the third deliverable.

Understanding the
problemThe analysis phase was split in three parts: the first considered the motorway as
a whole, the second deepened the knowledge about service areas and a third one
provided a sound theoretical framework.The first constructionThe first construction of the second deepened the knowledge about service areas and a third one
provided a sound theoretical framework.

The first study was conducted on the whole motorway trunk: quantitative data and interpretative maps were the first key information for understanding the general setting. This enabled a first comprehension of the variations taking place along the motorway, which require each design to be at the same time transversal (for homogeneity along the motorway) and site-specific. In a second moment the team used a subdivision, conceived by the work group composed by professors and tutors, in three macro sections, differentiated on the basis of infrastructural and territorial conditions. These were analysed separately, looking at the dominant elements of the landscape: this was intended to make the principal components emerge, in order to design the transformation accordingly. At the same time, some of them were to be valorised through the guidelines: for instance, the presence of vineyards and orchards in the Adige Valley inspired the inclusion of resellers of local producers in the service areas.

The territorial analysis was then scaled down to the service areas. First, it was considered the area surrounding them (approximately 4 km radius), while in a second moment specific analyses were conducted in order to fully understand how the areas function at the moment. Abacuses were realised about the distribution fluxes, permeability of the soil, typology (twin, associated and single areas), possibility of expansion and distance from the nearest toll station. These were crucial for the guidelines: by comparing all the service areas, the positive and negative elements emerged, allowing us to understand what had to be valorised and corrected. For example, it emerged that permeable soil is always more than 60% of the total surface, so that an urgent change is needed in this case.

In parallel, the problem was understood by deepening the theoretical background and through debates with the stakeholder. Several scholars who studied the motorway architecture and related elements were involved: lessons were provided on the topics of road dimensioning and curve radiuses, acoustics, mobility, history of the motorway and the perception of service areas in the society. These contributions helped to deepen the knowledge about specific requirements of such infrastructures, defining the limits of the research. At the same time, the meetings with the stakeholder allowed us to discuss the findings and let the crucial elements. For instance, we agreed on the importance of preserving the Garda Ovest cube by Dardi: they had planned to maintain it, we further emphasysed its uniqueness.

All the materials which we produced in this phase were crucial for the finalisation of the work: setting a latent problem rather than analysing an existing one allowed us to deduce what could be needed in the near and far future.



Image 3: design proposal for Campogalliano Est/Ovest, axonometry.



Image 4: design proposal for Sciliar Ovest, planivolumetric view.

Exploring the opportunities

The project started by analysing alternatives from the contemporary experiences of motorway architecture, characterized by a dual approach to the design of the service area: one focused on the architectural quality of the product, aiming at the balance between the seriality of the building and the variability of contexts, the other on the relationship established punctually between the service area and

	the motorway network, and between these and the territories crossed, in order to achieve a further characterisation of the areas.
	Therefore, the analysis, conducted from a systemic (regarding the whole motorway section) and a punctual point of view (regarding each service area), can lead to the individuation of the main threats and opportunities, endogenous and exogenous, resumed in the elaboration of a series of systemic guidelines (on numerous occasions examined and validated by the main stakeholder). These project intents are expressed in the three proposals, in which internal and external factors are seen as a leverage to cope with their main threats. In particular the three proposals (Campogalliano Est and Ovest, Garda Est and Ovest, Sciliar Ovest) exploit their particular condition to cope with their main issue. So, Campogalliano is intended to manage the intensity of mobility fluxes given the rural context and the high accessibility, Garda preserves and fosters the architectural heritage entering a cultural system, Sciliar provides a roadmap for the dismission of motorway infrastructure considering the value of the surrounding landscape.
Generating a solution	The outcome of the abovementioned analysis consists of both the drafting of guidelines to be applied in all service areas on the Brennero Motorway and their expression in three selected case studies.
	 First, the guidelines identified a number of elements to be considered during future transformations; these were classified according to four macro-thematic categories and articulated according to the time frame (short, medium and long term) and the relevance for the stakeholders involved; these are: the focus on the services the connectivity with the territory the importance of open spaces the environmental sustainability
	 This guidance document is tested and assessed though the three project proposals addressing the three main design topics of innovation, culture and landscape: Campogalliano Est and Ovest, which focuses on innovation, entails both new and different kind of facilities provided in relation to the fluxes that affect this section of the motorway and the way in which the of the service area adapts, in spatial terms, to variations (decrease or increase) in time of mobility. Garda Est and Ovest, addressing the culture theme, regarding both conservation and restoration of the service area pavilions, enhancing and promoting its heritage value and characterizing main use, which exploits its inherent potential. Sciliar Ovest to tackle landscape issues, in terms of both enjoyment for the motorway users and integration with the surrounding, pursued through a dismission of the current service area and its dismission and repurposing.

Image 5: design proposal for Garda Ovest, perspective.

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