Introduction: Roads Were Designed to Connect People – Today as in Antiquity

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From the perspective of the ruling powers in the ancient world, the strategic vision involved connecting collective communities, not merely linking different locations. Numerous examples show that the perception of 'people' took precedence over places of belonging to the extent that entire communities were often relocated to areas far from their original territory. This vision also prevailed in road construction. All great empires built robust road networks, recognising the strategic role that communication played in consolidating unity among distant communities.

The intent to connect people by creating corridors for the circulation of goods and messages is as old as humanity itself. In the Middle East, we find the earliest major routes, particularly the *King's Highway* (later the Roman *via Regia*), alongside even broader roads linking key trading hubs. The Assyrian Empire used roads as a fundamental instrument to grant cohesion to vast territories and, above all, to ensure effective administrative control through the transmission of messages and command documents.

As is well known, the political power that most thoroughly used road networks as instruments of factual expression was the Roman Empire. From Britannia to Syria, the main itineraries are estimated to have spanned more than 80,000 km. For Rome, their function was paramount: roads created a 'common ground', fostering spaces of connectivity, sharing and interaction that contributed to building a sense of communal identity. These networks acted as accelerators of cultural syncretism and, most importantly, from the metropolitan perspective, economic integration, as they opened markets and created opportunities. Building roads to connect communities meant, quite literally, paving the way to forge a sense of cohesion indispensable for such a vast and heterogeneous empire. It is no surprise, then, that the construction of roads often paralleled coasts or rivers: although water navigation was easier, more comfortable, cheaper and safer for Rome, building

circulation corridors was a grand and impactful expression of power. Investment in roads and associated works of art allowed, as with other public works, the idea of 'building for eternity', creating infrastructure that long outlasted the Empire. It is therefore unsurprising that the cartography used by D. Afonso Henriques, the first king of Portugal, during the conquest of the main cities of what would become Portugal, followed the routes of the major Roman itineraries from north to south or that in the Middle East, the Crusaders used the same still-active major routes.

This enduring legacy meant that with the resurgence of studies made possible by Humanism, ancient Roman roads were among the first vestiges of the past to be recorded. Admiration for the magnitude of roads, bridges and milestones was widespread among those who explored the subject in the 15th and 16th centuries. Their technical marvel was equated with aqueducts, temples and majestic buildings that had survived the passage of centuries and marked urban spaces. The perspective of researchers and antiquarians, who inaugurated the Iberian Renaissance such as André de Resende, Gaspar Barreiros and Francisco d'Ollanda in the Portuguese context, was particularly directed toward identifying road remnants as testimony of ancient connections between cities. This meant itineraries were considered key elements for restoring links between urban centres, helping to detect settlements mentioned in Classical sources but unknown to modern geography. The *Itinerarium Antonini Augusti*, a road map attributed initially to the 3rd century (most commonly used in the 1725 edition published by Pieter Wesseling titled *Vetera Romanorum Itineraria*), was a primary source for achieving detailed knowledge of both known and yet-to-be-identified locations.

Fidelity to classical texts shaped researchers' attention during the 17th and 18th centuries, though without the humanistic concern for on-site verification. With the rise of geographical studies and surveys, the

focus shifted to cartographic analysis, outlining routes through the most plausible paths. Of particular interest are the accounts of travellers, generally diplomats like José Cornide y Saavedra, António Ponz and Alexandre de Laborde, who left behind firsthand field observations from their journeys.

In the 19th century, research continued to gather documentation, now shaped by encyclopaedic spirits producing monumental *corpora* essential for compiling complementary information, such as *Corpus Inscriptionum Latinarum* by Emil Hübner. Field investigation became increasingly subordinate to the analysis of documentary data, resulting in schematic and mainly etymological interpretations. Except for isolated cases where field evidence was reported and roads identified *per se*, the analytical focus remained on seeking cities and settlements through road connections, aiming to reconstruct the ancient geography of the Iberian Peninsula. Seminal studies like those by Eduardo Saavedra, which centred on route identification and on-the-ground confirmation, reviving the humanistic tradition, were rare, and this trend continued well into the 20th century.

In both Portugal and Spain, the second half of the century brought new approaches to studying Roman roads. Particularly in Spain, the use of aerial photography and photointerpretation techniques advanced route identification. In Portugal, the decentralisation of administrative powers after the 1974 Revolution spurred many local studies, especially monographs and archaeological surveys, a movement that also gained traction in Spain during the 1980s with the creation of provincial authorities. Local and regional archaeological surveys reintroduced fieldwork as a preferred research method. However, many such efforts lacked the sensitivity or expertise to identify elements related to road heritage.

From the 1990s onward, the study of ancient roads underwent a true revolution. The availability of GIS tools and remote sensing introduced a broad range of new working methods, granting access to innovative ways of processing information and analysing both ancient and modern topographies. Beyond the recurring interest in identifying *urbes*, *mansiones* and *mutationes* directly linked to road infrastructure, remote detection has made it possible to identify camps, *oppida*, *vici* and other settlements that influenced road layouts. Within a few years, the landscape across much of the Iberian Peninsula was filled with points, marking a shift in how road geography was understood. Network and connectivity studies, heat maps, cost analyses, digital models, optimal routes and density analyses are just a few of the techniques and strategies that now offer an entirely new analytical perspective, made possible only through continually advancing technologies. The study of road networks now transcends mere cartographic interpretation or dependence on documentary inferences or simple field evidence, becoming a research process that integrates complex datasets from cross-referenced, geo-referenced databases.

The next step, which research will undoubtedly take in the near future, brings us back to the beginning of this text. We are increasingly knowledgeable about cities, route names and locations, ways of traversing the territory and the infrastructure that supported travellers. Yet we still lack a deeper understanding of the people: how these roads functioned in Roman times in relation to community settlements and individual citizens, and how they enabled crucial patterns of movement and connectivity. The landscape has gradually filled with data points, but the human dimension remains largely unknown.

Pushing these new frontiers of knowledge forward, the contributions presented in this volume offer innovative approaches to the study of ancient road networks through four thematic sections: 1 Methods for Reconstructing Ancient Itineraries through Remote Sensing and Non-Invasive Archaeology, 2 Reinterpreting Literary and Material Evidence on Roman Roads through GIS Analysis, 3 Advanced GIS and Computational Modelling of Roman Road Networks and 4 GIS and Environmental Analysis of Ancient Roads in Challenging Landscapes.