

**Rethinking Promethean planning:
An epistemological enquiry of technoscientific-centrism in planning theories**

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Abstract

The paper provides a critical exploration of technoscientific-centrism in planning theory through the lens of the Promethean myth. Considering the prevailing trends of hyper-specialisation, resurgent scientism and the associated risks of depoliticisation, there is a need to unpack the overreliance on techno-scientific rationality within planning disciplinary practices. This can be achieved by drawing upon concepts and analytical categories from outside the discipline. Accordingly, the Promethean myth offers a valuable opportunity to reinterpret the history of planning as 'science of prediction', that is, a field which has been marked since its origins by a conception of 'absolute' space introduced by modern scientific thought. The present paper delineates the paradigm of Promethean Planning, while concomitantly establishing the foundations for a post-Promethean conception of planning.

Key words: Promethean planning, positivist spatiality, scientism, specialisation, technology.

1. Planners, technology, and the never-ending quest for prediction and control

This paper presents an alternative perspective on the evolution of technoscientific-centrism in planning by exploring the myth of Prometheus. Given the apparent distance, in disciplinary terms, of the Promethean myth with respect to urban planning culture and history, a preliminary clarification is necessary. In the subsequent section, the tale of Prometheus, son of Iapetus, will be illustrated and analysed in relation to that of Atlas. A particular focus of this study lies in the relationship between humans and technology, with great emphasis placed on the consequences of this relationship for the domain of urban planning. The primary feature of the Promethean myth that will be examined subsequently is the aspiration for omniscience as the ultimate objective of a technocentric conception of planning. As will be argued in the fourth section, Promethean planning consists primarily of the combination of prediction and control – in the terms described by John Friedmann (1987) –, the result of which tends precisely to omniscience, ensured by the progressive enhancement of the predictive and modelling apparatus at the disposal of planners starting, at least, from the quantitative revolution.

This vision is deeply rooted in the positivist culture of planning and could be summed up effectively in the expression of George B. Ford (1913), according to which "In the science of city planning the whole city is our laboratory" (p. 551). The concept of an artificial space in which total control is ensured, as will be argued below, is predicated on the notion of 'absolute space' introduced by modern scientific thought (Voegelin, 1948). In such a space, actions and behaviours can be programmed, and therefore, everything can be predicted. The underlying thesis suggests that contemporary planning is characterized by the return of scientism, which insidiously combines the advancement of predictive technologies, based on the extraction of data on an increasingly large scale, and hyper-specialisation. In this regard, it's worth considering that such a trend is particularly striking within planning academe (Signoroni, 2022). As the Promethean myth becomes a way to deconstruct the role of planners as specialists, a key to unpack the origins of the relationship between the planner-specialist and technology might be traced back to early 20th century planning¹. Notwithstanding the critiques to rationalist planning, and to its

¹ Since its inception as both a discipline and a professional practice in the aftermath of the Second Industrial Revolution, urban planning has established what may be considered an enduring overreliance on techno-scientific rationality (Sandercock, 1998). Indeed, the integration of technoscientific rationality into planning theory and practice has profoundly shaped the process of professionalisation and institutionalisation since the early steps of the discipline. For instance, the social reform movement – which was imbued with positivist philosophy – significantly shaped the epistemological foundations of planning (Beauregard, 1990; Fairfield, 1994). The emergence of planning as a distinct field of practice has been extensively documented in scholarly literature (Birch, 1980; 2001; Birch and Silver, 2009; Peterson, 2009; Davoudi and Pendlebury, 2009). Notably, the evolution from

overreliance on technoscientific rationality, an in-depth inquiry into technoscientific-centrism in the domain of urban planning has never been undertaken. For this reason, an incursion into the language of myth may prove more beneficial.

Specifically, this study focuses on the Promethean myth. A substantial body of literature exists that examines the myth of Prometheus and its implications for science and technology (see: Kahn, 1970; Calame, 2005). Given the emphasis on the spatial dimension of technoscientific-centrism as the primary focus of this study, a thorough investigation of the Myth's spatial ramifications is envisaged. While drawing upon classical sources, particularly Hesiod (Arrighetti, 1984), the present study primarily draws upon three contributions. Robert Graves' well-known book, *The Greek Myths* (1960), serves as main reference to introduce the figure of Atlas. Carlo Sini's (1981) appraisal of the myth of Atlas and Prometheus – along with Simona Chiodo's (2020) analysis of the evolution of the relationship between humans and technology – serves to unpack the Promethean legacy, that is, the concept of scientific specialisation that underpins the 'destinal' movement of technology and, accordingly, the quest for prediction and control.

In the domain of planning, a prevailing technoscientific-centrism characterised by the pervasiveness of specialisation as the underlying rationale of the Western faith in technology (see section 3) has evolved into the prime component of what Gabriele Pasqui (2022a) delineates as 'the atmosphere'. Such curtain represents "the set of discourses, traditions, memories within which the practice of urban planning takes form (urban cultures, repertoires, transmission of knowledge, valorisation mechanisms)" (p. 45, translated in English by the author). Accordingly, Pasqui argues, "It is necessary [...] to recognize, together with the transformations of the [disciplinary] field, the concomitant shifts in the atmosphere" (ibidem). The extensive utilization of planning technologies – in the broadest possible sense, yet with specific emphasis on the comprehensive predictive modelling apparatus – has contributed, as Pasqui would assert, to the 'thickening' of the prevailing atmosphere by directing "the operational guidelines, the techniques, the tools" (ibidem). In the absence of "a fertile relationship between the development of tools and techniques for analysing territorial phenomena, also connected to the extraordinary availability of georeferenced data at our disposal [...]" the risk would be that "of supporting a (perhaps presumed) scientisation of urban planning analysis" (ibidem, p. 47). In this sense, examining the past through the lens of myth can offer insights into the present state of the art of the discipline, and potentially inform future theory-building scenarios.

2. Prometheus and Atlas: Symbols of 'technical mediation'

The figure of Prometheus unveils a peculiar reflection on the Western conceptualisation of technology, as it has been extensively discussed in the academic literature (see Kerenyi, 1997). Apart from Prometheus, a compelling parallel can be drawn between the myth of Atlas and the rise of faith in technology. Indeed, the two myths are deeply interrelated. Prometheus' older brother, Atlas "with a violent heart" (Hesiod: 509), is remembered as an inhabitant and lord of the far west, the Land of Atlas: "This land of Atlantis lay beyond the Pillars of Heracles, and a chain of fruit-bearing islands separated it from a farther continent, unconnected with ours. Atlas's people canalized and cultivated an enormous central plain, fed by water from the hills which ringed it completely, except for a seaward gap. They also built palaces, baths, race-courses, great harbour works, and temples; and carried war not only westwards as far as the other continent, but eastward as far as Egypt and Italy" (Graves, 1960: p. 143).

The myth of Atlantis is significant for two reasons. Firstly, it conveys the tale of a potent and technologically sophisticated population whose calamitous destiny is analogous to that of Prometheus. This is because when technological enhancement becomes hubris – that is, when it is employed to challenge the limits imposed by the gods or by fate – it must be stopped. In this regard, the case of Atlantis serves as a paradigmatic example: "The Egyptians say that [...] [Atlas and his brothers] at first [...] were extremely virtuous, bearing with fortitude the burden of their great wealth in gold and silver. But one day greed and cruelty overcame them and, with Zeus's permission, the Athenians defeated them single-handed and destroyed their power. At the same time, the gods

an engineering focus to a planning emphasis within the field resulted in a substantial shift in terms of urban expertise. Traditionally, engineers addressed the ailments of industrial cities (Schultz and McShane, 1978); in contrast, urban planners adopted a more comprehensive and scientific approach in addressing the broader needs of the city as a whole (Karvonen et al., 2021).

sent a deluge which, in one day and one night, overwhelmed all Atlantis, so that the harbour works and temples were buried beneath a waste of mud and the sea became unnavigable" (ibidem).

In contrast to the prominent recognition of Prometheus as the 'ancestor of human beings', Atlas has received comparatively less attention in this regard. The reasons for this discrepancy in treatment, so to speak, are not limited solely to a genealogical question. In the ancient Greek mythos, Prometheus is recognized as the progenitor of Deucalion, who, in collaboration with Pyrrha, is tasked with the responsibility of reestablishing humans in the aftermath of a deluge unleashed by Zeus. However, according to the myth, he is also the deity who oversaw the creation of humankind, shaping it from mud and infusing it with fire. Herein a critical distinction emerges between Prometheus and Atlas. Following the destruction of his kingdom, Atlas aligned himself with Kronos, taking a stance against the Olympic gods (an action that would result in a punishment from Zeus). In contrast, Prometheus chose to support the offspring of the Titans. This decision was met with respect and trust from Zeus. In contrast, Atlas' punishment is regarded as exemplary in that "he is placed on the western edge of the Greek cosmos with the task of holding the sky with his shoulders. Atlas is therefore the one who operates the separation between heaven and earth. The alternation of day and night, or rather the birth of time, is the result of his work" (Sini, 1981: p. 255, translated in English by the author).

Accordingly, Atlas directly operates "the separation between human and divine, being the one who started the relentless flow of time that devours the creatures of a day" (ibidem). This would position him, along with Prometheus, as an alter ego of human beings, thereby serving as a symbol of technical mediation. This reflection is further enriched when considering the subsequent myths associated with the figure of Atlas. According to the 1930 edition of the Treccani Encyclopaedia, "with the diffusion of the euhemeristic interpretation [...] it even goes so far as to make him an astronomer and a mathematician, inventor of the sphere" (translated in English by the author). Accordingly, as a second-generation Titan, Atlas is the brother of Prometheus, the lord of Atlantis, and the rebel ally of Kronos in the Titanomachy. Much more importantly, because of his treason and the consequent punishment, he becomes a mediator between the celestial and terrestrial realms; the originator of time and, in a broader sense, the progenitor of astronomy, to whom we owe the conceptualisation and development of the sphere².

What most deserves to be considered here with respect to the myth of Prometheus and Atlas is precisely their being 'mediators'. Atlas creates space by holding up the celestial vault with his own body. It is no longer the Euclidean space – an abstract notion of space (Friedmann, 1993; Graham and Healey, 1999) – but, rather, the space of human life, the space where bodies can breathe, walk, meet, and collide³. Moreover, he presides over the alternation of day and night, the natural pace of time. Symbolically placed in the extreme West, to hold up the sky, Atlas is therefore complementary to Prometheus, chained on the Caucasus, in the extreme East – where an eagle sent by Zeus every day devours his liver, destined to grow again in the night, thus perpetuating the torture for eternity (Chiodo, 2020). The two titans are therefore considered ancestors of mankind because they preside over the very first 'technical acts': the invention of time (its scanning, its control) and of fire. Prometheus's actions, in this case the act of stealing fire from the gods, are driven by a desire to assist humanity, whom he had previously endowed with intelligence and memory. However, it is through the agency of fire that men achieve emancipation. It serves as a symbol of technology, that is, *techne*: "the study and use of techniques, procedures, and advanced technical and scientific knowledge for the solution of practical problems" (Wikipedia). Accordingly, technology

2 It is noteworthy that from the 16th century onwards, the term 'atlas' has traditionally been employed to denote a compendium of graphic works – that is, cartography – which have constituted, and continue to constitute, a primary instrument of graphic communication for planners as well as for geographers and, albeit to a lesser extent, for architects and engineers.

3 In a recent essay, Cristina Bianchetti (2020) examined the relationship between bodies, space, and design. Filled with 'extra disciplinary' references, the contribution enables critical and original readings of the relationship between the body (in its many variations of state and movement) and the space (of the project). Affirming the presence of the body is a political act in itself; however, 'scientific planning' is such in the extent to which it replaces the body (of the subject, of the expert in the field) with pervasive technological mediation – georeferenced data, for example. For further insights into this topic, I refer the reader to Signoroni (2023b).

does not represent an external force; rather, the myth of Prometheus suggests that humans are innately 'technological beings'.

The human being, created with a deficiency due to the fault of Epimetheus (the foolish brother of Prometheus), becomes such when it can handle fire intelligently: "through the fire, jointly with the other Prometheus' gift to the Humans, namely, the intelligence, they can survive animals and atmospheric agents, live under the sun, and even rule the earth. [...] the fire intelligently used is divine in that it is so powerful that humans can rule the earth. Moreover, the fire intelligently used is divine in that it is precisely what makes the humans analogous to the gods" (Chiodo, 2020: p. 212).

3. The Promethean legacy: Specialisation and the civilisation of technology

It is therefore not by chance that human beings are the dominant species on Earth. They are destined for domination precisely because they are technological beings, that is, beings whose actions draw upon (and are informed by) specialisation. In this regard, the concept of specialisation must be understood in its profound meaning, intimately linked to the nature of man and the advent of the 'age of technology':

specialisation means to look at the species. The original Latin meaning of species is 'image', 'appearance', 'spectacle', 'form'. The related verb *specere* means 'to observe', 'to watch', 'to look at' [...] The species is what lets itself be seen. And in turn, 'it is by virtue of its visibility that the species can be observed, analysed, controlled, measured, desired, feared, refused, shunned [...]. We interpret things as species and enact specialisation, and scientific specialisation is 'the certainty of the difference between things' put into practice in the most coherent and powerful manner: science 'isolates a part (species) of reality; it separates it from the other part in order to be able to observe its configuration and behaviour' (Pitari, 2019: pp. 368-369).

When interpreted in this manner, specialisation can be regarded as anticipating the utilisation of technology by humankind: "Humans can exist as the beings who organise means, realise ends, make decisions and transform the 'world' only in virtue of the prior ontological isolation of all things [...] This is how we define human beings as technological beings" (ibidem: pp. 369-370). Scientific specialisation, therefore, responds to a very specific criterion (isolation of the predetermined field of observation, for purposes of control and manipulation), progressively accentuating it in parallel with technological enhancement. The emergence of the scientist-expert is also a consequence of scientific specialisation. Over the course of a few decades, the modern scientific method was established and with it the figure of the scientist-expert under the influence of astrologists as Johannes Kepler and Galileo Galilei and of philosophers such as Francis Bacon and René Descartes.

All in all, specialisation emerges as "the factual realisation of humankind" (ibidem). Through it, the Western civilisation accomplishes its own destiny, becoming a true civilisation of technology. On the 'destinal' character of the event of technology, Carlo Sini (1981) dedicated an insightful reflection which is worth mentioning in this context:

The word 'essence' [...] means 'destiny', both in the sense of the occurrence of a destinal event, and in the sense in which Peirce, in the 'pragmatic maxim', speaks of consequences that are destined. In these two cases a movement (kinesis) is implicit which [...] involves a distinction between 'sense' and 'significance': the interpretant revealing of the present involves a reinterpretation of the sense of the past; it is that which awaits the passage into the future. With the help of an image we can [therefore] depict the destinal movement [...] as a wave which, in its progress, draws away a mobile and expanding circumference. However, the circumference swings in two directions: in the direction of expansion and, also, in the direction of continuous decentralisation. [...] Now, as involved in the movement of this spatially precipitating wave [...] we miss the perception of the propelling center of the circumference that is unfolding, of the movement itself of that center. Similarly, the event of technology, by destining us, drags us along; and thus, also and in a certain way, it directs us towards the driving force of the unfolding movement in which we ourselves are but together it dis-oriens us from it (pp. 251-252, translated in English by the author).

Such unfolding movement of technology, therefore, while it destines us, it also compels us to acknowledge that “the present technological configuration of our civilisation may be a recent historical circumstance, but its Weltanschauung is as ancient as humankind” (Pitari, 2019: p. 371). Scientific specialisation, which lies at the heart of the destinal movement of technology, plays a critical role in shaping the direction of technological development and establishes the foundations for subsequent technological progress.

In correspondence with the rise of modern science, the concept of specialisation began to represent the structure of modern thought and accordingly imbued the culture of the 16th and 17th centuries, including the arts. In this regard, a compelling and particularly effective representation of specialisation is that provided by John Marlowe in his *Doctor Faustus* (1587). As acknowledged in the literature (Watt, 2007), the Faust is a potent ‘contemporary’ myth. It sheds light on specialisation as the implicit, though well-established, framework of modern thought. In order to exercise dominion over the capricious and uncontrollable forces of nature, it is necessary to acquire profound knowledge, which can be obtained through an ‘isolation’ process. This is to say, by acknowledging each entity as isolated from the rest. In this sense, the words spoken by Marlowe’s Faustus can be interpreted as prophetic.

In the opening scene, as the character of Doctor Faustus is presented to the audience, he goes through all the disciplines in which his studies excel, including logic, medicine, law and theology. While appreciating logic and the law, he harbours a strong aversion to medicine, perceiving it as a discipline that offers no promise of immortality to humankind⁴. Moreover, he expresses disdain for theology, deeming it futile given the inherent propensity of humanity to commit sins⁵. In the domain of magic, a realm that Faustus has not investigated yet, he discerns the potential for greatness and potency⁶. The whole discourse is characterised by a sense of Promethean fashion. This is due to the fact that the “metaphysics of magicians” would bestow upon Faustus omniscience, thereby conferring the ability to foresee the future (hence the meaning of Prometheus: the ‘foreseeing’). Though, it is the specialised conception of knowledge that is most striking. The words used by Faustus are indicative of the advent of modern science, as they already embody its fundamental premise, which is to be found in the scientist’s essentially manipulative eye.

A second relevant consideration pertains to necromancy. As posited by several works in the field of anthropology (see, for instance: Gell, 1988; Stahl, 1995), magic may be regarded as a rudimentary form of technology. In this regard, Arnold Gehlen’s contribution is worthy of mention. In his essay *Die Seele im technischen Zeitalter* (1957), which was subsequently translated and published in English under the title *Man in the Age of Technology* (1980), Gehlen discusses the extent to which both primitive and advanced civilisations, such as the Egyptian and the Greco-Roman, relied on magic as a form of proto-technology to bring order in, and equilibrate, the world. Accordingly, magic was performed to ensure predictability, regularity, and order in the face of a chaotic and unpredictable natural environment. In a world perceived as inhospitable to life, the cyclical repetition was assumed to provide a sense of security and stability. Therefore, magic was comprehended as a means to ensure and preserve the automatic, self-regulating, and repetitive character of the natural course. This compelling observation regarding

4 “Be a physician, Faustus, heap up gold, / And be eterniz’d for some wondrous cure. / Summum bonum medicinae sanitas, / The end of physic is our body’s health. / Why, Faustus, hast thou not attain’d that end? / Is not thy common talk sound aphorisms? / Are not thy bills hung up as monuments, / Whereby whole cities have escap’d the plague / And thousand desperate maladies been cur’d? / Yet art thou still but Faustus, and a man. / Couldst thou make men to live eternally/ Or being dead raise them to life again, / Then this profession were to be esteem’d. / Physic, farewell!” (Marlowe, 1616, retrieved from the John D. Jump’s 1965 edition).

5 “When all is done, divinity is best. / Jerome’s Bible, Faustus, view it well. / Stipendium peccati mars est. Ha! Stipendium, etc. The/ reward of sin is death: that’s hard. Si peccasse negamus, / fallimur, et nulla est in nobis veritas. If we say that we / have no sin, we deceive ourselves, and there’s no truth in/ us. Why, then, belike we must sin, and so consequently / die. / Ay, we must die an everlasting death. / What doctrine call you this? Che sarà, sarà: / What will be, shall be! Divinity, adieu!” (ibidem).

6 “These metaphysics of magicians / And necromantic books are heavenly; / Lines, circles, letters, and characters: / Ay, these are those that Faustus most desires. / O, what a world of profit and delight, / Of power, of honour, of omnipotence, / Is promis’d to the studious artisan!” (ibidem).

magic as a supernatural technology may become a useful key to understanding the meaning of contemporary technology. If the abovementioned assertion that the ultimate aspiration is to exercise control over the surrounding environment is accurate, then technology – like magic before it – is nothing more than a faith or, at least, a theory – certainly not the absolute truth⁷.

The following section will explore the influence of these factors on the Promethean conception of planning, with particular emphasis on the role of planners during the early decades of the 20th century, marking the inception of the planning academe. Particular emphasis shall be placed on the following areas:

- The formation of the concept of expertise in the field of urban planning, as shaped in the light of positivist rationality. That is to say, the combination of prediction and control as a means to achieve a virtual omniscience
- The related conceptualisation of space
- The consolidation of the planners' professional epistemology in the face of older and newer scientific postures.

4. Theorizing Promethean planning

The distinctive feature of the Promethean conception of planning is the unique combination of predictive capabilities and the exercise of control as a means to achieve virtual omniscience. It is precisely with reference to such characteristics that the definition of Promethean planning is going to be used here, in order to depict the dawn of planning as a professional practice and an institutional activity which was, and still is, imbued with Promethean fashion. However, a comprehensive understanding of Promethean planning necessitates a preliminary clarification regarding the conceptualisation of space, which will constitute the primary focus of this section. As a discipline dealing with socio-spatial dynamics – in terms of theorisation, regulation, and design – planning is inherently concerned with the concepts of 'space' and 'place'. In the context of Promethean planning, it is essential to note that the inclination towards control, which is both facilitated and reinforced by the integration of predictive technologies within planning practices, is underpinned by a distinct conceptualisation of space. The concept of omniscience, which constitutes the unconfessed ambition of planners could not have been achieved in the absence of the idea of space as theorised by Euclid and subsequently by modern scientists, an idea of space which ensures full control.

The interpretation of the myth of Prometheus (and Atlas) suggests a pertinent reflection: the abstract conceptualisation and representation of space paves the way for human domination of the Earth. According to the myth, the rebel titan provided human beings with technology and, in so doing, he set them on the path for domination. The latter is realised primarily and necessarily through the possibility of controlling space and time. It has previously been posited that the creation of space for human life was initiated by the actions of Atlas (Sini, 1981). By granting to human beings the measurability of time through the alternation of day and night, Atlas enabled a 'technological' conception of time which complements the representation of space in relation to its manipulability. This combination ensures an unparalleled dominion over nature which has been introjected in planning epistemology. Thus, in the domain of urban planning space has historically been regarded as a 'given'; an a priori condition that has influenced and indeed been instrumental in the development of the discipline during the 19th and 20th centuries. In order to comprehend the genesis of planning as an "art and science" (Birch, 1980), it is necessary to analyse the conditions that determined its professional, institutional and academic structure (as well as its current and future development).

As previously indicated, the positivist paradigm, of Comtean descent, has played a pivotal role in the develop-

⁷ In this regard, as argued by Paolo Pitari, Emanuele Severino's theoretical endeavour is paramount in that it "invites us to consider that there may be good reason to doubt what we take for granted" (Pitari, 2019: p. 384). In appraising Severino's work on specialisation and technological thinking, Pitari asserts that "We are the Occidens, the West" and that "We pray at the altar of individual freedom, elevating our belief in our power to be technological beings to the ultimate truth" (ibidem). If technology is nothing more than a faith, only "through an interpretation of reality entirely other could one question the ethos of technology (the ethos of power). Only if the technological interpretation of reality is wrong, the ethos of power could and should be questioned" (Pitari, 2019: pp. 384-385).

ment of planning. Of particular interest here is the positivist conception of space, which depends as much on the Euclidean tradition (Friedmann, 1993; Davoudi, 2012) as on what, according to Harari (2017), we could define as the 'myth of Newton'. When considering the genesis of the concept of positivist spatiality, Davoudi (2012) emphasises that "Positivism portrays an absolute view of space which is rooted in Euclidean geometry. Euclid's three-dimensional geometry enjoyed uninterrupted sovereignty until it was challenged in the late 19th century. His ideas were accepted for a long time because 'it had been covertly built into Newtonian physics'" (p. 5). Accordingly, Isaac Newton's contribution as both a scientist and philosopher is paramount in that it established the conceptualisation of space as an "infinite container" (ibidem), characterised by objectivity and measurability, which are also assumed to inform the conceptualisation of place (ibidem). Indeed, according to Davoudi: "Place is considered as objective, bounded, self-contained and measurable [...] [so that positivism] considers space and place as either synonymous or binaries" (Davoudi, 2012: p. 5, italic added).

This conception, firmly anchored in the Euclidean tradition and subsequently confirmed by the scientific revolution, established the foundations for the impulse to control space that is characteristic of Promethean planning. A closer examination reveals that such vision is deeply rooted in the Enlightenment tradition (ibidem), wherein science establishes the epistemic underpinnings of the theory of space. In such a milieu, the role of the scientist-expert attained an unparalleled status, which was established on the basis of a novel 'myth' according to which only by mastering sufficient knowledge heaven on Earth could be achieved (Harari, 2017). The scientific method, therefore, endows humanity (in the role of the scientist-expert) with the will and power to exert control over nature, unravel its mysteries, and establish dominion over creation. This authentic project of conquest is made possible by reducing space to an object, and as such: knowable, measurable, and manipulable. The above-mentioned Euclidean spatiality, which centuries later would become the domain of action for planners (Friedmann, 1993), was hence reinvented and strengthened by modern science – which complemented the Euclidean geometry with Newtonian laws of physics.

Albeit only more recently with respect to the major professions, planning too has joined the ranks of the scientific-technological apparatus devoted to achieving the "technological paradise" (Severino, 2006). Two seminal figures in the field can be regarded as the initiators of the scientific approach to planning: Patrick Geddes and Ebenezer Howard. The contributions of Lewis Mumford, Raymond Unwin and Patrick Abercrombie, even though to a lesser extent, are also worthy of mention. At the turn of century, when planning was not yet institutionalised, the contributions of extraordinary figures such as Geddes and Howard helped shape the core of a disciplinary field strongly focused on social utopianism. The principles of urban planning were already firmly rooted in the positivist model. The notion of the survey (Geddes) and, subsequently, that of the garden city (Howard, Unwin, Abercrombie) were predicated on the ideology of social reformism, which emerged as a response to the squalor of the industrial city (Benevolo, 1963).

Indeed, the utopian projects of the first decades of the 20th century played a decisive role in defining planning as an institutional activity. In this regard, Howard's model is exemplificative, as Luigi Mazza contends: "Howard's proposal can be taken as the anticipation of a technocratic planning approach which assumes that it possesses an optimal and progressive model of urban growth and applies it in an almost undifferentiated way throughout the territory. The assumption that the model is excellent and scientifically based is one of the reasons for justifying that it is the state that imposes it. [...] Howard's proposal [...] ends up providing the technical basis for general state intervention in planning and land uses" (Mazza, 2002: p. 27, translated in English by the author). According to this perspective, the first attempts to plan urban growth according to decentralisation models effectively contributed to the subsequent utilisation of planning as an institutional technology, that is, a form of social control pursued through the imposition of specific spatial models (Mazza, 2007, 2009).

However, in that initial phase, the planning techniques and tools that would have facilitated the success of those models were rudimentary, if not yet developed. Moreover, an adequate regulatory framework and the expertise capable of overseeing the complex implementation processes were lacking too. Accordingly, during the 19th and 20th centuries, practitioners engaged in urban planning were, de facto, 'non-experts'. Geddes was a sociologist,

Howard a parliamentary stenographer, and Mumford a historian (just to mention the three most influential). The combination of these two shortcomings – the utilisation of obsolete techniques and a paucity of expertise – profoundly conditioned the origins of the disciplinary field. This condition of precariousness, due to the absence of a shared disciplinary epistemology, decreased significantly in the following decades in conjunction with the institutionalisation process that took place, above all, in the United Kingdom and the United States.

It was in the 1950s that a significant transformation occurred, with planning being recognised as an autonomous discipline and academic field, thus marking the beginning of a period of consolidation (Davoudi and Pendlebury, 2009). Consequently, the role of the planners as 'experts' was considerably strengthened⁸. During this period, specialisation dominated the disciplinary debate, with the assumption that without specialisation, there is no disciplinary epistemology capable of guiding education and professional practices. Harvey Perloff's renowned formula, "A generalist with a specialty" (Perloff, 1956: p. 203), effectively summarise the paradigm that emerged in the mid-century. Such a model fosters the planner as a specialist who also possesses knowledge in a broader range of subjects. Founded upon the rational conception of planning, in continuity with the Enlightenment tradition (Friedmann, 1987; Sandercock, 1998; Allmendinger, 2002; Beauregard, 2020), that disciplinary paradigm also marks a shift with respect to the technocratic, positivistic planning culture of the early 20th century. Indeed, as remarked by Davoudi (2012) the latter is founded upon empiricism: "Positivism refers to an empiricist approach to scientific knowledge which starts from the senses and particulars and gradually rises up to the most general axioms. [...] For empiricists, knowledge is a matter of bottom-up experience (a posteriori)" (p. 3). The rational-comprehensive model, by contrast, is predicated on the conceptual and epistemological foundations of rationalist philosophy. The substantial difference between the two approaches lies in the fact that for the rationalists "knowledge is a matter of top-down underlying theories and laws (a priori)" (ibidem), while for the positivists "it rests on observation as the moment of the truth when hypotheses are tested against the facts of the world" (ibidem).

The transition from the positivist model to the rational-comprehensive one is of crucial significance: it constitutes an unprecedented reversal of perspective on the epistemological level. Prior to the advent of the rational-comprehensive model, technocratic planning was essentially conceived as a form of craft, with a strong association to architecture and engineering. This conception underwent a shift with the introduction of the abovementioned model. Consequently, planners are regarded as comprehensive experts whose actions draw upon a scientific theory of the discipline: "systems analysis and other rational-comprehensive approaches [...] imagine a specific type of planner: a technical expert who draws conclusions and develops advice based on the analysis of scientific evidence [...] Expert knowledge and scientific theories are thus central to how rational planning is to be done" (Beauregard, 2020: p. 23). In the context of the "Systems Revolution", a term coined by Peter Hall (1996), the culmination of Promethean planning is ultimately reached. This development, characterized by the utilisation of computational tools and modelling, enabled unprecedented capabilities, including the previously unattainable control over the development trajectories of urban growth:

The subject changed from a kind of craft, based on personal knowledge of a rudimentary collection of concepts about the city, into an apparently scientific activity, in which vast amounts of precise information were garnered and processed in such a way that the planner could devise very sensitive systems of guidance and control, the effects of which could be monitored and if necessary modified. More precisely, cities and regions were viewed as complex systems [...] while planning was seen as a continuous process of control and monitoring of these systems, derived from the then new science of cybernetics developed by Norbert Wiener (Hall, 1996: p. 327).

Back then, the increase in the predictive capabilities – of a true Promethean fashion – assumed a position of paramount significance. Indeed, the evolution of the scientific-technological apparatus, which began in the early

⁸ In this regard, Peter Hall observes that "the job of the planners was to make plans, to develop codes to enforce these plans, and then to enforce those codes; relevant planning knowledge was what was needed for that job; planning education existed to convey that knowledge together with the necessary design skills. [...] planning was now institutionalized into comprehensive land-use planning" (Hall, 1996: p. 322).

1960s, has been accompanied by a progressive strengthening and extension of urban planners forecasting capabilities. Despite the initial enthusiasm expressed by some planning theorists, the practical application of the systems approach proved to be largely unsuccessful and was criticised accordingly (Goodman, 1972; Rittel and Webber, 1973; Wildavsky, 1973). Among the criticisms that have been raised, some originated from within the community of rational planners themselves, as observed by Beauregard (2020). Accordingly, notwithstanding their technological apparatus and scientific methods, “Planners are poor predictors of the future, never fully cognizant of the consequences that their plans will engender, and are often inattentive to unintended outcomes” (pp. 25-26).

5. Is a post-Promethean conception of planning possible?

The Promethean planning paradigm has endured and thrived to the present day. In the contemporary urban digital era, tools and applications which were formerly unimaginable now appear to have no limits when it comes to their ability to explain, predict, and eventually control urban phenomena. Such boost of scientisation is already re-setting urban planning research agenda globally. A whole new field of study has emerged under the name of ‘urban science’, which seeks to harness new technologies and enhanced computational power to deliver reliable, accurate scientific knowledge about cities (Karvonen et al., 2021). Differently from the previous attempts to establish a scientific basis for the discipline (Signoroni, 2024), urban science introduces a significant shift. Instead of being incorporated into planning disciplinary practices, it lays the foundations for a competing field aimed to eventually complement planning. Accordingly, the Promethean paradigm would extend its scope far beyond the boundaries of academic and professional planning. Indeed, a number of urban science promoters posit that they can inform scientifically planning decision-making. In contrast to conventional experts such as planners and architects, they claim to address urban challenges in a scientific manner. As specialists in the hard sciences, they provide public decision-makers with something that planners have attempted to provide, albeit unsuccessfully, namely ‘bulletproof’ scientific evidence.

Returning to the concept of ‘atmosphere’ (Pasqui, 2022a), as previously introduced, it can be observed that the scientisation of the discipline not only thickens this atmosphere but also dilates it. The applications of digital technology in the urban realm are expanding exponentially. Evidence of this phenomenon can be found in the growing availability of georeferenced datasets and the employment of advanced modelling software and sophisticated sensing technologies for the purpose of harvesting fine-grained data. While this atmosphere thickens and expands rapidly, it is critical for planners to introspect regarding the efficacy of their actions (Balducci, 1991) and the challenges posed by situations of radical uncertainty (Pasqui, 2022b). This introspection must encompass the acknowledgment of two fundamental human uncertainties: the cognitive and the historical (Morin, 2000).

In the current era, characterised by the proliferation of technology, there has been an inevitable rise in complexity (Ceruti, 2015). This phenomenon manifests not only in the magnitude of the prevailing challenges and issues but also in the constraints (and inherent dangers) of hyper-specialisation, which is the true legacy of the Promethean conception. If, as has been suggested, specialisation has underpinned the development of both the hard and social sciences, hyper-specialisation can be considered pernicious. According to Morin, “the disciplinary institution involves [...] a risk of hyper-specialisation of the researcher and a risk of ‘cosification’ of the studied object, of which we risk forgetting that it is extracted from the context or constructed. The object of the discipline will then be perceived as a self-sufficient thing: the bonds and solidarities of this object with other objects, treated by other disciplines, will be neglected, as will the bonds and solidarities with the universe of which the object is part” (Morin, 2000: p. 112, translated in English by the author). In this context, post-Promethean planning entails acknowledging the intricacies inherent in complex systems, while concurrently eschewing the pitfalls of hyper-specialisation. This represents a considerable challenge that planners are called to take up in that the initial step towards a post-Promethean conception necessarily involves a distancing from hyper-specialisation, intended as the key to virtual omniscience and hence the nucleus of Promethean planning. If it’s true that without specialisation there is no technology, then without technology there is no omniscience. Nowadays, planners are confronted with constraints imposed by pervasive disciplinary rhetoric (Palermo, 2022; Signoroni, 2023a),

which is combined with the resurgence of a positivist epistemology of an empiricist nature – as advocated by proponents of urban science. Furthermore, contemporary planners are faced with the dilemma of whether to place their trust in technology – that they hardly acknowledge as an ideology (Habermas, 1972) – or to refuse it.

While it expresses an unwavering confidence in the efficacy of technoscientific rationality in steering the scientific-technological apparatus, thereby governing the transformation processes of the territory, the faith in technology frequently manifests as a scientific disposition. Akin to a kind of “Mumbo Jumbo” (Scruton, 2011) which serves to address all inquiries and circumvents forms of dissent or conflict, this scientific attitude fosters a pernicious depoliticisation of planning processes, which are removed from the logic of accountability and public scrutiny. Novel forms of data-driven planning appear to substantiate such hypothesis, notwithstanding prior failures – particularly about effectiveness, but also in terms of participation and inclusion. This drift appears to coincide with, and potentially exacerbate, the tangible risk of the academic expert becoming ‘isolated’ (Wachs, 2016; Signoroni, 2022, 2023b).

Conversely, it would be imprudent to rely on the opposing faith: the repudiation of any assertion of scientific belief, thus resulting in the pursuit of planning reduced to a mere discursive practice. To overcome the Promethean conception and avoid falling into its opposite, it is necessary to overcome faiths and acknowledge technology as a vision of the world that can be challenged. Because a post-Promethean conception of planning transcends both faith and rhetoric, a first attempt towards alternative theory-building scenarios should be to ‘perforate the atmosphere’ and thereby pave the way for a meta-disciplinary project that is open to practices of trespassing (Morin, 2000).

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