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For a sociology of local innovation ecosystems

A work in progress on NRRP and the Rome Technopole

Tommaso Fasciani

posthumous work edited by Ernesto d'Albergo

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In copertina | *Cover image*: Sapienza University of Rome, Via Salaria 113 with "Rome Technopole" logo.

Per Tommaso

Tommaso Fasciani (1992-2024)

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Foreword. Tommaso Fasciani and the PhD School in Social Sciences and Economics

Roy Cerqueti, Coordinator of the PhD School in Social Sciences and Economics – Sapienza University of Rome

Emma Galli, Director of the Department of Social Sciences and Economics – Sapienza University of Rome

Assunta Viteritti, Coordinator of the Curriculum "Sociology and Applied Social Research" of the PhD School in Social Sciences and Economics – Sapienza University of Rome

This is a special book. It presents the contents of Dr Tommaso Fasciani's doctoral thesis. Tommaso attended the PhD School in Social Sciences and Economics at the Sapienza department of the same name, in the Sociology and Applied Social Research curriculum.

In October 2024, Tommaso presented his thesis, and the following month he received the evaluations of two academics belonging to different disciplines. The evaluators" judgements were (and are) positive, and they recognized elements of originality and rigor in the scientific work of this young scholar. As often happens, these opinions contained useful suggestions for improving the research work and, indirectly, facilitating its adaptation into a publishable monograph. After carefully analyzing the comments received, Tommaso began the revision process with the aim of finalizing his thesis and taking the exam to obtain his PhD in the spring of 2025.

But Tommaso didn't have time to complete his program. A tragic and sudden road accident took his life at the age of just 32, just before Christmas 2024. This book contains Tommaso's scientific work and is dedicated to him and to all those who knew, loved, and remember him with sorrow: to his family; to the teachers who had the opportunity to appreciate his qualities, whether through a constant relationship or more sporadic encounters; to the students and doctoral candidates with whom he shared study, work, laughter during the long eight years spent in the sociological studies environment in Rome; to colleagues, Italian and international, met in the activities of the Italian Sociological Association and the European Sociological Association and to the technical-administrative staff of Sapienza University of Rome who had the privilege of interacting with him.

Finally, the book is a tribute to his friends and partners in civil and political commitment, which represent the various forms of activism in contemporary society, dimensions that Tommaso has deeply experienced, both in practice and in research.

This book is mainly intended for PhD students, as the material collected bears witness to the research process in the social sciences and the fundamental stages that enrich academic training after graduation. The program requires each doctoral student to measure themselves against various evaluations: that of their tutor, with whom they maintain an ongoing dialogue; that of the other doctoral professors, particularly during presentations and discussions of work in progress; and that of the external reviewers of the first version of the thesis, who provide new perspectives, highlighting strengths and areas of improvement. Finally, there is the doctoral defense evaluation. In the Sociology and Applied Social Research curriculum of the PhD School attended by Tommaso, to these steps is added a consolidated practice: students present their intermediate working papers and receive comments from two discussants, one internal and one external to the Scientific Board.

The following texts show one of these moments, presenting the thesis in its initial version alongside the evaluators' comments. For this reason, Tommaso had begun to investigate further the processes and methods of representing innovation and the Rome Technopole project in the Roman public and economic space, also taking advantage of the resources made available by the research project financed by the University in 2022 on "Governance of the urban economy and state policies: the National Recovery and Resilience Plan in Rome", in which he officially participated.

As we explained at the beginning, this book is special: it is an unfinished, collective work that we want to continue with scientific rigor, but also with friendship and affection for a young researcher who was not only close to completing his thesis but who, thanks to his intellectual and human qualities, would certainly have continued his academic career with new research and publications. Those he had already made are listed at the end of this volume.

Tommaso has left a huge void; the sadness for all the scientific work that he won't be able to continue is added to the dismay caused by his loss. We will miss his sweet and tenacious intellectual curiosity, and this book is a gift to the doctoral community and those who will continue, in Italy and abroad, in this important field of study. Thank you, Tommaso, for being with us.

Presentazione. Tommaso Fasciani e la Scuola di Dottorato in Scienze Sociali ed Economiche

Roy Cerqueti, Coordinatore della Scuola di Dottorato in Scienze Sociali ed Economiche – Sapienza Università di Roma

Emma Galli, Direttrice del Dipartimento di Scienze Sociali ed Economiche – Sapienza Università di Roma

Assunta Viteritti, Coordinatrice del Curriculum Sociology and Applied Social Research della Scuola di Dottorato in Scienze Sociali ed Economiche – Sapienza Università di Roma

Questo è un libro speciale. Riporta i contenuti della tesi di dottorato di ricerca del dott. Tommaso Fasciani. Tommaso frequentava la Scuola di Dottorato in Scienze Sociali ed Economiche dell'omonimo dipartimento di Sapienza, nel curriculum *Sociology and Applied Social Research*.

Nell'ottobre del 2024, Tommaso aveva presentato la tesi, e il mese successivo aveva ricevuto le valutazioni di due accademici appartenenti a discipline differenti. I giudizi dei valutatori erano (e sono) positivi, e ravvisavano nel lavoro scientifico di questo giovane studioso elementi di originalità e rigore. Come accade spesso, questi pareri contenevano suggerimenti utili per migliorare il lavoro di ricerca e, indirettamente, per facilitarne l'adattamento in una monografia pubblicabile. Dopo aver analizzato attentamente i commenti ricevuti, Tommaso aveva iniziato il processo di revisione con l'obiettivo di finalizzare la tesi e affrontare, nella primavera del 2025, l'esame per ottenere il titolo di Dottore di Ricerca.

Ma Tommaso non ha avuto il tempo di completare il suo percorso. Un tragico e improvviso incidente stradale lo ha portato via, a soli 32 anni, poco prima del Natale del 2024. Questo libro contiene l'opera scientifica di Tommaso, ed è dedicato a lui e a tutti coloro che lo hanno conosciuto, amato e ricordato con dolore: alla sua famiglia; ai docenti che hanno avuto modo di apprezzarne le qualità, sia attraverso un rapporto costante, sia in occasioni più sporadiche; agli studenti e ai dottorandi con cui ha condiviso studio, lavoro, risate durante i lunghi otto anni trascorsi nell'ambiente degli studi sociologici a Roma; ai colleghi, italiani e internazionali, incontrati nelle attività dell'Associazione Italiana di Sociologia e della European Sociological Association e al personale tecnico-amministrativo di Sapienza Università di Roma che ha avuto il privilegio di interagire con lui.

E infine, il volume è un omaggio ai suoi amici e compagni di impegno civile e politico, che rappresentano le molteplici forme di attivismo nella società contemporanea, dimensioni che Tommaso ha vissuto profondamente, sia nella pratica che nella ricerca.

Questo libro è pensato soprattutto per gli studenti di dottorato, poiché il materiale raccolto rappresenta una testimonianza del processo di ricerca nelle scienze sociali e delle tappe fondamentali che arricchiscono la formazione accademica dopo la laurea. Il percorso prevede che ogni dottorando si misuri con diverse valutazioni: quella del proprio tutor, con cui si instaura un confronto continuo, quelle degli altri docenti del dottorato, in particolare durante le presentazioni e discussioni di lavori in corso, e quelle dei revisori esterni della prima versione della tesi, che offrono nuove prospettive, evidenziando punti di forza e aspetti da migliorare. Infine, vi è la valutazione della commissione di esame finale. Nel curriculum *Sociology and Applied Social Research* della Scuola di Dottorato frequentata da Tommaso, a questi passaggi si aggiunge una prassi consolidata: gli studenti presentano in due occasioni i propri elaborati ricevendo osservazioni da due discussant, uno interno e uno esterno al Collegio dei docenti.

I testi che seguono illustrano uno di questi momenti, presentando la tesi nella sua versione iniziale insieme ai commenti dei valutatori, che evidenziano sia i punti di forza, sia gli aspetti da perfezionare. Per questo, Tommaso aveva iniziato un ulteriore approfondimento sui processi e le modalità di rappresentazione dell'innovazione e del progetto Rome Technopole nello spazio pubblico ed economico romano, sfruttando anche le risorse messe a disposizione dal progetto di ricerca finanziato dall'Ateneo nel 2022 su "Governance dell'economia urbana e politiche statali: il Piano Nazionale di Ripresa e Resilienza a Roma", a cui partecipava ufficialmente.

Come detto all'inizio, questo libro è speciale: è un'opera incompiuta e collettiva, che vogliamo portare avanti con rigore scientifico, ma anche con amicizia e affetto per un giovane ricercatore che non solo era prossimo al completamento della sua tesi, ma che, per le sue qualità intellettuali e umane, avrebbe certamente proseguito il suo percorso accademico con nuove ricerche e pubblicazioni. Quelle già realizzate sono elencate alla fine di questo volume.

Tommaso ha lasciato un grande vuoto; allo sgomento della perdita si associa anche la tristezza per tutto il lavoro scientifico che non potrà continuare a fare. Ci mancherà la sua dolce e tenace curiosità intellettuale e questo libro è un dono alla comunità del dottorato e a coloro che proseguiranno, in Italia e all'estero, in questo importante filone di studi. Grazie, Tommaso, per essere stato con noi.

Theory, research and civil engagement in the biography of Tommaso Fasciani

Ernesto d'Albergo
Doctoral thesis and degrees thesis supervisor – Sapienza University of Rome

As the subtitle points out, this volume is a work in progress, incomplete in two senses. On the one hand, as explained in the presentation, because Tommaso was working on the revision and completion of his text, trying to make the most of the two evaluations he had received to present the final version to the Commission that would have been set up to defend his thesis and award him the title of PhD. On the other hand, because Tommaso had already planned together with the writer of this foreword – who had the pleasure of following him as a supervisor during his doctoral studies and, previously, as the supervisor of his Bachelor's and Master's theses – to turn the thesis into a publication, already agreed upon with Sapienza Università Editrice. As we thought it would be, it will not be published. We had hypothesized to reverse the sequence presented in the following pages, which first outlines the theory and then its application to a case, in a different order: the object to be studied and the motivations for the research, the scientific problem focused on, the theoretical and methodological tools, the results of the empirical survey, the interpretation, the scope of its generalization, the possible subsequent developments of the investigation. For this reason, the volume has the title we had intended, with the addition of a subtitle – *For a sociology of local innovation ecosystems. A work in progress on NRRP and the Rome Technopole* – but the text after this preface retains the title of the doctoral thesis: *The Rome Technopole as a local innovation ecosystem: a Cultural Political Economy approach*.

What we designed is an established pattern in social analysis. Tommaso would have used this to present an original contribution in which the sociological perspective finds the critical approach of Cultural Political Economy to be a specification not only appropriate on a

theoretical and methodological level but also aligned with the critically oriented perspective that Tommaso, as we shall see, had made a cognitive pillar in the pursuit of politically characterized goals and values.

Tommaso would have chosen to get his PhD in the disciplinary field GSPS/-07/A Sociology of Political Phenomena because his study focused on the many facets of the relationship between society, politics, and public policy. However, his research and the topics on which he had done his previous theses testify to his participation in current efforts to bring together and, in some cases, combine not only several theories but also several disciplines. As proof of how feasible this is and how it can also shape personal scientific paths, Tommaso had already started research activities as a research fellow as part of a PRIN research project in economic geography on the topic of social innovation in the city and the implications for urban spaces, society, and governance (Sapienza University of Rome and University of Siena). A shift in disciplinary perspective, but an object not far from his previous interests: the research carried out by Tommaso in the sociology curriculum of his doctoral program focused precisely on the urban context – present in several of the teachings of the curriculum he attended – and, in particular, on the relationship between public policies aimed at building and strengthening local ecosystems of innovation, their consequences in terms of accumulation strategies and, more generally, the political economy of the urban area and its governance processes.

As emerges from the double title, Tommaso's research focused specifically on Rome. It aimed to understand the continuities and possible changes introduced in its political economy system by the implementation of a program within the National Recovery and Resilience Plan (Next Generation EU) launched in 2021: the realization of Rome Technopole, a center for research and technology transfer promoted by the regional system of public universities in Lazio as alongside with private universities, public research bodies, industrial associations, industries and enterprises, the Lazio Region, the Municipality of Rome, and the regional Chambers of Commerce. It is a remarkable initiative due to its innovative nature in the Roman context, as it involves a plurality of political, economic, and knowledge players – with Sapienza University in a pivotal position as chair of the Foundation of the same name – mobilized according to an ecosystem thinking via a complex policy network. The activities are aimed at promoting technology transfer by strengthening links between universities and industry, to

contribute to the development and competitiveness of the economic system in the metropolitan area. Therefore, it enables the analysis of policies aimed at supporting the creation and consolidation of start-ups, the transfer of technology from academia to the market and, more broadly, the creation of innovation ecosystems in urban contexts. How? By investigating the relationships between policy making – in its cultural, political, and economic dimensions – and the continuities or changes in accumulation strategies at the urban scale.

To this end, Tommaso placed his analysis at the intersection of two main theoretical and interpretative approaches, attempting to bring Cultural Political Economy (CPE) and theories of urban governance into dialogue, with particular reference to the concept of urban regime and its previous applications to Rome. But what is CPE? Let us see it in Tommaso's own words, through some extracts from the essay entitled "Il potere politico e il concetto di egemonia" that he wrote for the *Sociologia della politica contemporanea* handbook (edited by E. d'Albergo and G. Moini, Carocci, 2024, citations omitted):

> «It is an approach that researches the contemporary characteristics of hegemony by assigning explanatory importance to both cultural (discourses, rhetoric, arguments, representations, more generally ideas) and material (interests) aspects, agency and structure factors. In fact, this approach attempts to integrate aspects concerning the sphere of culture, and more generally the interest in the social production of intersubjective meanings (semiosis), into the analysis of economic and political relations and their social embeddedness. Since all social phenomena have both semiotic and material properties, it is necessary to analyze their interconnections and co-evolution in the construction and interpretation of social relations (...). CPE differs from mainstream perspectives in that it aims to strip economic and political responses [to crises] – such as the austerity policies promoted in the aftermath of the financial-economic crisis that began in 2007 – of the veneer of naturalness and inevitability they have acquired through processes of technicalization and depoliticization. This veneer makes them taken for granted, making the interpretations on which these policies are based the tools of hegemony of the ruling classes in contemporary capitalism (...).
>
> How does it work? A central role in the explanatory model of CPE is that of political-economic imaginaries. An imaginary is a semiotic set that frames the lived experience of individual subjects of an extraordinarily complex world and makes it possible for them to interpret it.

Many imaginaries exist and interrelate forming complex and intricate relationships in different places and scales of action. Without them, individuals cannot "move" in the world, and collective actors (such as organizations) cannot interact with their environments, make decisions or pursue more or less coherent strategies. Some of the imaginaries that in different historical periods have conveyed economic policy imperatives and normalized them as common sense are, for example, the state-based models defined by theories such as Keynesianism – which gave rise to major projects such as the New Deal or contributed to complex social organizations as in Fordism – or more recently the knowledge-based economy, or sustainable development.

Economic imaginaries, in particular, play a key role in identifying, privileging and seeking to stabilize specific economic activities. When an imaginary has been operationalized and institutionalized, it leads to a homogenization of policies and the establishment of specific relationships between political and economic actors. A good example in this respect is Next Generation EU, a policy not only implemented through conditionality [...], but also legitimized by appealing to imagery such as innovation or sustainable development.

How do we get to this stage? CPE analysis focuses on the co-evolution of semiotic and extra-semiotic factors and processes in the variation, selection, and retention of discursive and material practices. Crises produce deep cognitive, strategic, and practical disorientation, disrupting the established worldview of political and social actors and creating a space for the proliferation of different interpretations of the causes and remedies of the crisis itself (variation). Only some of these interpretations are selected and translated into economic strategies and policies (selection); of these, only some prove effective and are retained, becoming the basis for private and public strategic and policy initiatives to manage and/or overcome the crisis (retention).

Linked to the imaginaries are knowledge brands, models for action consisting of a set of discourses and practices, which serve as hegemonic tools for meaning making. They are translated into policy prescriptions and pragmatic methodologies, enabling action. They are often promoted by international organizations (e.g. the OECD, WEF, WB), research institutes, think tanks, academic "gurus", or prominent consultants, who claim a unique knowledge of a strategic or policy-relevant field and pragmatically translate it into (trans-)national symbols, recipes and policy instruments that address political problems and dilemmas. In this respect, a knowledge brand is a transnational manifestation and condensation of institutional, organizational, and discursive power in the knowledge-consultancy-political circuit [...].

> Circulating transnationally, knowledge brands offer simple but flexible models that can be developed and recontextualized according to changing global, regional, national and local conditions. This is done through specific tools such as benchmarking, reports and indexes.
>
> In summary, CPE provides useful tools for incorporating the analysis of the dynamics of the cultural sphere into the study of power and the relationships between politics and the economy. On the one hand, this is important from an ontological point of view, as culture and semiosis are co-constitutive of social existence and represent a theme or phenomenon of interest (discourses, identities, events, practices, processes, institutions, cultures and subcultures, everyday life), hence an object of research. On the other hand, they are important from a methodological point of view, as the cultural aspects of social relations provide a perspective, an entry point, to explain other aspects of the social world, including power. At the same time, not everything can be traced back to the semiotic dimension, as material and immaterial processes are co-constitutive of social and political relations».

In order to understand the implications of science and technology policies and, within them, of programs aimed at innovation and technology transfer, Tommaso tried to combine this analysis of meaning and specific meaning-making processes with the study of economic and political relations and their social embeddedness. In particular, his aim was to reconstruct the emergence of discourses on innovation ecosystems, as a hegemonic conceptualization of the relations between universities and research on the one hand and businesses and the market on the other, in a specific territorial context, namely urban and metropolitan scales. The research was conducted over the period 2022-2024, using a qualitative empirical survey method based on the realization of semi-structured interviews (15) with some of the main actors involved in the Technopole project. This methodology was complemented by the analysis of discursive artefacts of a different nature, ranging from policy documents to strategic orientation documents in the field of innovation and technology transfer, produced by political and economic actors involved in the governance of the project and, more generally, in the political economy of Rome. Tommaso used the conceptual tools of *Critical Discourse Analysis* to analyze EU and national policy documents related to the PNRR.

The conclusions that Tommaso has been able to reach, set out in the final part of the thesis, are – as he explicitly tells us – provisional, partial, and hypothetical and "require further investigation in terms of

both theoretical development and empirical analysis". Although it is still in the early stages of development, the Rome Technopole already shows innovative features when compared to the existing system of relationships between actors, and the creation of the related innovation ecosystem can be both a trigger for broader transformations and a lens through which understand these transformations. At the same time, it is proving to be an opportunity to concretize, coordinate and systematize actions previously imagined, communicated and put into practice by the various actors involved in the analyzed process, thus testifying to the degree of endorsement for the imaginary linked to innovation ecosystems.

Tommaso hypothesized that the PNRR had opened a window of opportunity – following J. Kingdon's Multiple Stream Framework – to realize in Rome a project that had already been conceptualized, in its main aspects, by the involved stakeholders. Thus, it helped concretizing pre-existing discourses and agreements connecting industry, universities, and the Lazio Region, forming the agendas of these actors even prior to the COVID-19 crisis. The Technopole has so far proved to be a catalyst, which seems to facilitate the systematic integration of these collaboration and technology transfer practices. In the critical juncture determined by an unforeseen crisis, the stimulus package -providing financial resources and political and institutional legitimacy – enabled the coupling of the problem stream, the policy stream and the political stream.

Then, a specifically territorial aspect emerges, that Tommaso would have liked to explore further, concerning the impact of Technopole and PNRR on Rome's "urban regime". The actions taken to recover from the crisis have reactivated a flow of State investments in Rome, a resource that glues together urban political economy (comprising public and private interests, local and national political systems) that had been missing in the 2010-2020 period. From the discussion of the empirical material collected, there emerges – albeit in an incomplete manner, which Tommaso planned to complete – a relationship, on one hand, between policies, strategies and the imaginary of technological and economic innovation and, on the other, the expectations nested in the system of material interests of the Roman and regional territory. These expectations pertain to the possibility of transforming some of the sedimented characteristics of the Roman production system, with technology transfer identified as a driver of this transformation.

A transformation that Tommaso's research has highlighted bringing forth its material and cultural dimensions, and the role of knowledge actors – particularly universities – as a vector of the latter. In the case of the Rome Technopole, Sapienza's leadership role testifies to the shift of universities towards an entrepreneurial model and their growing role in local development. The Technopole is interpreted by the actors in the policy network as an enzyme, the yeast that initiates and enables the development of other similar initiatives, further fueling the necessary social and political legitimization through shared visions and languages, so that the investment made appears as both material and symbolic. The process is incomplete because, as Tommaso argues, "business representatives complain about the difficulty the universities have in adopting discourses and practices appropriate to the business model" and there are also some difficulties in aligning ways of thinking and acting to create a coalition of actors that can also have relevance in the broader context of the Roman political economy.

This perspective on critical policy analysis, with particular reference to the urban scale and the articulation between the semiotic and material dimensions, testifies to the intersection in Tommaso's experience of education and initial scientific production with civil and political engagement. With regard the first aspect, in the few years Tommaso had at his disposal, he published several articles and presented at national and international conferences (see the list at the end of the volume). Therefore, one would be tempted to summarize Tommaso's biography as a student with a word that became part of the academic jargon and common sense due to processes that Tommaso firmly criticized. Tommaso would probably be classified as an "excellent" student and young scholar by the standards set by those regulatory transformations and semantic practices that have concretized the neo-liberalization of Italian university and scientific research, according to a logic of individual affirmation through competition. Following this logic, the honors degree in Sociology and the master's degree in Applied Social Sciences, the doctoral course in the Sociology and Applied Social Research curriculum, the international experiences – the Erasmus experience at the Universidad Complutense de Madrid, Facultad de Ciencias Políticas y Sociología, during the master's degree, the research fellowship at the University of Lancaster (Environmental Center) during the PhD program – would prove this. These experiences were complemented by Tommaso's participation in other research, collateral to his doctoral work on various aspects of urban gov-

ernance and technological innovation, group work in which he demonstrated qualities of openness, collaboration and reliability. Moreover, even before concluding this part of his scientific journey, Tommaso already started the aforementioned activities under a research grant.

However, I prefer to highlight another aspect of the value already demonstrated by Tommaso as a scholar-in-training: a specific applicative bending of his scientific and cultural curiosity, animated by a desire to understand the characteristics and mechanisms of power in contemporary society. This understanding sharpened his critical capacity to make original contributions not only to academic discussion, but also to struggles to counter the worst social and cultural effects of contemporary capitalism. Political sociology provided him with a privileged environment of theories and methods, but Tommaso sought not to be confined by academic boundaries. He was curious about different approaches and tried to connect them. In his motivation letter for the PhD School (2021) he wrote:

> «I am moved by the desire to deepen my knowledge about scientific theories and methods, but also about tools and techniques of empirical analysis, and to acquire greater autonomy in planning and carrying out research, both on a local, national and international scale. In particular, I am attracted by the possibility offered by the new doctoral school to critically reflect on theories and models, as well as on the intersection between different disciplines. I believe that this is the only way to build original interpretative models to understand the social, political and economic trends of complex societies, to conduct investigations with high methodological quality and to propose convincing interpretations of the complexity of social, economic, political and cultural phenomena of contemporary societies. Furthermore, from my point of view, the possibility of producing original and applicable scientific results is crucial».

"Applying scientific results" in his short experience meant above all linking research objects, critical theories, and participation in collective action. In fact, using the theoretical perspectives he had frequented, Tommaso wanted, starting from his personal and direct experience, to make theory a cognitive resource and orientation for engagement and conflict for social justice. At the same time, he wanted to use social phenomena – conflict, but not only that – as objects to better understand social theories and subject them to empirical testing.

Tommaso completed his National Civil Service at the "Senza Confine" association, helping at the legal assistance desk, mainly aimed at foreigners and migrants, and also accompanying these users to local public offices. Even more significant in his civic and political engagement, however, was his participation in the *Communia* project, a Roman experience born in 2013. During the cycle of occupations known as the "tsunami tour", promoted by the movement for the right to housing, the abandoned and decaying shed of the former Piaggio (San Lorenzo railway yard) was occupied. This space is at the center of a paradigmatic urban neighborhood from the point of view of real estate speculation, which seems to be betting on abandonment and easier subsequent valorization of buildings for private purposes. Tommaso participated in the restoration of the spaces, which were made available to various mutual aid and social self-organization activities: an Italian language school, music, theatre and yoga workshops, a "migrant tailor's shop", trade union counters and, above all, *Sharewood*, the study room self-managed by the student collectives of Sapienza. Tommaso animated this study room and the *Coordinamento dei Collettivi Universitari* (Coordination of University Collectives), collaborated in setting up and cataloguing its copious library (around 5,000 titles), organizing services and political discussions. Having been carried out during the course of study, these activities inspired a reflexivity that Tommaso sought to convert into theoretical research, in order to understand their roots, their place in social transformation processes – in their interdependent economic, political, and cultural implications – and their potential for promoting democratization and social equity. This makes it easier to understand the reasons for his choice of topics for his dissertations.

The three-year degree (2016) was Tommaso's first real opportunity to grapple with the challenge of understanding and appropriately using scientific theories and methods. In his thesis, entitled "De-politicization and re-politicization of the social. The practice of re-appropriation of spaces", Tommaso sought to grasp theories on the processes of de-politicization and re-politicization of society and public action and their effects on the functioning of democratic processes, encountering various theses, such as that of "post-democracy". Using these theories, he focused on social dynamics activated by depoliticization, analyzing specific forms of resistance, practices of mutualism and solidarity through which components of civil society put forward rad-

ical demands which Tommaso interpreted as the "re-politicization" in an autonomous form of the social. In this initial work, he sought to apply interpretative frames and analytical tools of political sociology to a specific case: the re-appropriation project carried out by the student collectives of the Sapienza university in Rome, involving the occupation and self-management of a study room. He had carried out a pre-analysis on this case, aimed at developing some questions for the sociological research project with which the thesis concluded: where does the political character of new forms of collective action reside and how does it become explicit, if it exists? With what tools and practices do the actors involved try to carry out their project of re-politicizing social relations and relationships?

Although it was a bachelor's degree thesis, Tommaso positioned himself in a perspective that he would deepen three years later in a more systematic manner to write the essay "The Social Movements of Contemporaneity" in the aforementioned handbook (Carocci, 2024). It is an approach that, in his words:

> «Analyses new practices of social resistance through which self-organised groups attempt to counter the social and environmental consequences of neo-liberal policies and build alternative socio-economic configurations, based on principles such as mutualism and solidarity between people and a more sustainable connection to the environment. These practices and actors include buildings occupations (squats) in urban areas, urban gardening, "Solidarity Purchasing Groups", alternative food networks, the small producers' movement and other mutualistic actions that aim to create a bottom-up alternative to the retreat of the welfare state. These practices have been interpreted as direct social actions that, instead of asking the state, aim to directly transform specific aspects of society. Although similar forms of action have been part of the repertoire of social movements even earlier, economic crises increase their scope and broadened the social groups involved. Their means incorporate and reflect the aims that activists want to pursue. In this way, political ideals are actualized "here and now", seeking to prefigure a way of life beyond capitalism. The focus of sociological analyses, therefore, is on the direct transformative power of the action itself, which is often accompanied by the expression of political claims.
>
> This perspective [...] brought back to the center of analysis political-economic factors and their influence on social movements: they can inhibit or facilitate the formation of new collective identities and solidarities

> – class-based or otherwise; determining the balance of class forces in society and within the movements themselves, shaping their objectives and strategies; conditioning ideologies and cultural languages. [...] Greater attention to the causal mechanisms associated with the dynamics of capitalism could therefore improve the explanatory capacity of many current analyses of social movements. Human "production", in fact, is not only "material", the manufacture of things, but also the production – or "construction" – of social relations and symbolic forms, as well as the reproduction of the producers themselves. A challenging perspective emerges for the social sciences: to trace and highlight the interconnections between specific issues and particular repertoires of action, organization, and understanding of specific movements and the broader social relations of production that – more or less explicitly – they address.

Meanwhile, in his master's thesis entitled "Social Reproduction Theory. Hypothesis and research approach" (2019), Tommaso had instead aimed to reconstruct the history and characteristics of *Social Reproduction Theory*, a materialist approach to gender-related social relations of subordination in capitalist society. This objective gave him the ability to handle, on the one hand, understandings of the daily and generational reproduction of labor-power that sustains the process of accumulation in the capitalist system and, on the other, those on the structural relationship between the different dynamics of oppression of gender, race and sexuality and the capitalist production of surplus value. Thus, Tommaso examined certain positions in the debate on the use of the categories of critical thought, in particular Marxian political economy, for the analysis of gender oppression in capitalist society. On one hand, there is the theory of intersectionality, which emerged within African-American feminism around the idea of the simultaneity of multiple forms of oppression; on the other, there is the "feminism of social reproduction", which is more closely connected to Marxist theory and reformulates concepts such as economy, labor, and class. The dissertation focused on the empirical developments of *Social Reproduction Theory* as an approach and method for analyzing gender and race dynamics, as well as changes in social reproduction due to the globalization of the economy and the rise of neo-liberalism.

Tommaso's interest in issues of social reproduction was also sparked by the rise of the feminist and transfeminist movement *Non*

Una di Meno in 2016. Not so differently, Tommaso's interest in strategies of accumulation in urban contexts, along with their economic, political, and cultural components, arises from the observation of Rome's political agenda and the role of urban transformation and valorization of territorial resources within it. Dealing with Rome Technopole and its potential impacts was a research effort aimed at understanding a new type of change that the innovation at the centre of this PNRR project was inducing in Rome's political economy and "urban regime". This regime, where spatial and economic transformations are linked together, was subjected to strong uncertainty since the end of the public investment cycle for "Roma Capitale" (1990-2010).

This reconstruction, however, remained incomplete. After the thesis evaluation phase, Tommaso would have had up to six months to integrate the empirical survey – and to this end he had already set up the systematic analysis of the articles published in the local sections of three newspapers (la Repubblica, Il Messaggero, Corriere della Sera) – to reconstruct the processes of communication and the formation of a shared meaning in the public sphere regarding the Technopole innovation process, while seeking relevant *imaginaries* and *knowledge brands*. This part of the research would have extended the scope of the previous study. In fact, the documents analyzed and interviews conducted had revealed the social construction of ecosystems as the central objective of research and innovation policies. Furthermore, it enabled Tommaso to highlight the correspondence between the components of this system of action and the underlying system of *imaginaries*, *knowledge brands*, and normative models of innovation. In particular, political, university, and local business actors view universities as requiring an inevitable change to adapt to market needs, thereby intensifying their connection with businesses.

The university's adaptation to the needs of the market and the specific interests that move within it, converted into "general interests" also as a result of public policies aimed at building innovation ecosystems, was placed by Tommaso at the center of a critical discussion. However, he did not have time to rearrange and develop the results as he had planned. As mentioned, the further aim was to change the logic of exposition. What follows in the next pages corresponds to a more "scholastic" format suitable for a doctoral thesis to be "defended" in examinations, in which the demonstration of crit-

ical capacity is indeed expected, but first and foremost of in-depth knowledge of theories and interpretative and methodological tools, as well as the ability to adapt them to one's own cognitive goals. The planned version of the text would have focused on answering the research questions and on an original interpretation of the object studied, in this case the connections between the technological innovation policy made possible by the PNRR and the accumulation model and the political economy of Rome.

There was no time, and this deprived the production of knowledge about Rome of a contribution, perhaps small, but significant in its originality. It has also deprived the writer of this foreword of the satisfaction of seeing the first monographic work of a young scholar he has co-authored essays and articles with, and whose intellectual growth he has followed not only with the dedication necessary for his academic role, but also with an extra measure of affection and empathy, facilitated by Tommaso's human qualities of sympathy, modesty, and irony. These qualities have made him companion for ten years, during which the student has gradually become a younger friend. With him, I have not only shared the effort and seriousness of the scientific work but also engaged in political discussions, reflections on personal experiences, as well as a common passion that has brought us even closer: our love for A.S. Roma, an ingredient that has colored Tommaso's inclusion in our city. Rome welcomed him and other students, not only at La Sapienza and other universities, but also in the spaces of civic engagement, social struggles, and even in the sporting symbols of collective identification with the city and its history, as demonstrated by the tribute displayed by "his" Curva Sud – *Tommaso lives forever* – in the derby of 5 January 2025, won a few days after his passing.

Teoria, ricerca e impegno civile nella biografia di Tommaso Fasciani

Ernesto d'Albergo
supervisor della tesi di Dottorato e relatore delle tesi di Laurea – Sapienza Università di Roma

Come evidenziato dal sottotitolo, questo volume è un *work in progress*, incompleto in due sensi. Da un lato, come illustrato nella presentazione, perché Tommaso stava lavorando alla revisione e al completamento del testo, cercando di valorizzare le due valutazioni ricevute, per presentarne la versione definitiva alla Commissione che sarebbe stata costituita per la difesa della tesi e il conseguimento del titolo di Dottore di ricerca. Dall'altro, perché Tommaso aveva già progettato insieme con chi scrive questa prefazione – che ha avuto il piacere di seguirlo come supervisore nel percorso di dottorato e, in precedenza, come relatore delle tesi di laurea triennale e magistrale – di trasformare la tesi in una pubblicazione, già concordata con Sapienza Università Editrice. Così come l'avevamo pensata non vedrà la luce. Infatti, avevamo ipotizzato di capovolgere la sequenza che, nelle pagine che seguono, presenta prima la teoria e poi la sua applicazione a un caso, in una successione diversa: l'oggetto da studiare e le motivazioni della ricerca, il problema scientifico messo a fuoco, gli strumenti teorici e metodologici, i risultati della rilevazione empirica, l'interpretazione, la portata della sua generalizzazione, i possibili successivi sviluppi dell'indagine. Per questo motivo, il volume porta il titolo che avevamo pensato, con l'aggiunta di un sottotitolo – *For a sociology of local innovation ecosystems. A work in progress on NRRP and the Rome Technopole* – ma il testo che viene dopo questa prefazione mantiene la titolazione della tesi di dottorato: *The Rome Technopole as a local innovation ecosystem: a Cultural Political Economy approach*.

Quello che avevamo ipotizzato è uno schema consolidato nell'analisi sociale. Tommaso se ne sarebbe avvalso per presentare un contribu-

to originale in cui la prospettiva sociologica trova nell'approccio critico della *Cultural Political Economy* una specificazione non solo appropriata sul piano teorico e metodologico, ma anche consonante con lo sguardo criticamente orientato di cui Tommaso, come vedremo, aveva fatto un pilastro conoscitivo al servizio del perseguimento di fini e valori caratterizzati anche politicamente.

Tommaso avrebbe scelto di addottorarsi nel settore disciplinare GSPS/-07/A "Sociologia dei fenomeni politici", perché il suo studio ha riguardato proprio le tante sfaccettature dei rapporti fra società, politica e politiche pubbliche. Tuttavia, la ricerca che aveva condotto e gli stessi temi sui quali aveva realizzato le tesi precedenti testimoniano della sua partecipazione agli sforzi attualmente profusi di far dialogare e, in alcuni casi, combinare non solo più teorie, ma anche diverse discipline. A riprova di quanto ciò sia fattibile e possa dare un'impronta anche ai percorsi scientifici personali, Tommaso aveva già avviato le attività di ricerca come assegnista nell'ambito di una ricerca PRIN di geografia economica sui temi dell'innovazione sociale nella città e le implicazioni per gli spazi urbani, la società e la governance (Università Sapienza di Roma e Università di Siena). Uno spostamento di prospettiva disciplinare, ma un oggetto non lontano dai suoi interessi precedenti: la ricerca svolta da Tommaso nel curriculum sociologico del suo dottorato ha avuto per oggetto proprio il contesto urbano – presente in più insegnamenti del curriculum che ha frequentato – e, in particolare, la relazione tra le politiche pubbliche mirate alla costruzione e al rafforzamento di ecosistemi locali di innovazione, le loro conseguenze per quanto riguarda le strategie di accumulazione e, più generalmente la *political economy* dell'area urbana interessata e i suoi processi di governo.

Come emerge dalla doppia titolazione, la ricerca di Tommaso ha riguardato specificamente Roma e ha avuto l'obiettivo di comprendere le continuità e i possibili cambiamenti potenzialmente introdotti nel suo sistema di *political economy* dall'attuazione di un programma interno al Piano Nazionale di Ripresa e Resilienza (Next Generation EU) lanciato nel 2021: la realizzazione di *Rome Technopole*, un centro per la ricerca e il trasferimento tecnologico promosso dal sistema regionale delle università pubbliche del Lazio e private e da enti pubblici di ricerca, associazioni industriali, industrie e imprese, Regione Lazio, Comune di Roma, Camere di commercio regionali. Si tratta di un'iniziativa rilevante per la sua natura innovativa nel contesto romano, poiché coinvolge una pluralità di attori politici, economici e della cono-

scenza – con la Sapienza in posizione di pivot a presiedere l'omonima Fondazione – in un'ottica ecosistemica e attraverso un *policy network* complesso. Le attività sono finalizzate a promuovere il trasferimento tecnologico rafforzando i legami tra università e industria, per contribuire allo sviluppo e alla competitività del sistema economico nel territorio metropolitano. Consente quindi di analizzare politiche volte a sostenere la creazione e il consolidamento di start-up, il processo di trasferimento tecnologico dalla ricerca al mercato e più in generale la creazione di ecosistemi dell'innovazione nei contesti urbani. Come? Indagando le relazioni tra il *policy making* – nelle sue dimensioni culturali, politiche ed economiche – e le continuità o i cambiamenti nelle strategie di accumulazione su scala urbana.

A questo fine, Tommaso ha collocato la sua analisi all'intersezione fra due principali approcci teorici e interpretativi, cercando di far dialogare la *Cultural Political Economy* (CPE) e le teorie della governance urbana, con particolare riferimento a quella dei regimi urbani e alle sue precedenti applicazioni al caso romano. Ma che cosa è la CPE? Vediamolo con le parole di Tommaso, attraverso alcuni estratti dal saggio intitolato "Il potere politico e il concetto di egemonia" che ha scritto per l'handbook di *Sociologia della politica contemporanea* (a cura di E. d'Albergo e G. Moini, Carocci, 2024, omesse le citazioni):

> «Si tratta di un approccio che ricerca le caratteristiche contemporanee dell'egemonia assegnando importanza esplicativa ad aspetti sia culturali (discorsi e retoriche, argomentazioni, rappresentazioni, più generalmente idee) sia materiali (interessi), e a fattori di tipo tanto *agency*, quanto *structure*. Questo approccio infatti tenta di integrare aspetti che riguardano la sfera della cultura, e più in generale l'interesse per la produzione sociale di significati intersoggettivi (semiosi), nell'analisi delle relazioni economiche e politiche e del loro radicamento sociale. Poiché tutti i fenomeni sociali hanno proprietà di tipo sia semiotico, sia materiale, è necessario analizzare le loro interconnessioni e la loro coevoluzione nella costruzione e nell'interpretazione delle relazioni sociali (…). La CPE si differenzia dalle prospettive di tipo *mainstream* poiché si propone di svestire le risposte economiche e politiche [*alle crisi*] – come le politiche di austerità promosse nel periodo successivo alla crisi economico-finanziaria iniziata nel 2007 – dalla patina di naturalità e inevitabilità che hanno acquisito attraverso processi di tecnicizzazione e depoliticizzazione. Questa patina le fa dare per scontate, rendendo le interpretazioni su cui queste policy si basano degli strumenti di egemonia delle classi dominanti nel capitalismo contemporaneo. (…).

Come funziona? Un ruolo centrale nel modello esplicativo della CPE è quello degli immaginari politico-economici. Un immaginario è un insieme semiotico che inquadra l'esperienza vissuta dei singoli soggetti di un mondo straordinariamente complesso e permette loro di interpretarlo. Esistono molti immaginari e sono coinvolti in relazioni complesse e intricate in diversi luoghi e scale di azione. Senza di essi, gli individui non possono "muoversi" nel mondo e gli attori collettivi (come le organizzazioni) non potrebbero relazionarsi con gli ambienti, prendere decisioni e perseguire strategie più o meno coerenti. Alcuni immaginari che in diversi periodi storici hanno veicolato imperativi di policy economiche e li hanno normalizzati come senso comune sono ad esempio i modelli basati sul ruolo dello stato definiti da teorie come il keynesismo – che ha dato vita a grandi progetti come il New Deal o contribuito a complesse organizzazioni sociali come nel fordismo – o più di recente l'economia basata sulla conoscenza, o lo sviluppo sostenibile.

Gli immaginari economici, in particolare, hanno un ruolo fondamentale in quanto identificano, privilegiano e cercano di stabilizzare delle specifiche attività economiche. Quando un immaginario è stato operazionalizzato e istituzionalizzato determina un'omogeneizzazione delle politiche e l'istituzione di rapporti specifici tra attori politici ed economici. Un buon esempio a questo proposito è *Next Generation EU*, una policy non solo attuata attraverso la condizionalità […], ma anche legittimata con il richiamo a immaginari come l'innovazione o lo sviluppo sostenibile.

Come si arriva a questa fase? L'analisi della CPE focalizza la coevoluzione di fattori e processi semiotici ed extra-semiotici nei processi di variazione, selezione, ritenzione di pratiche discorsive e materiali. Le crisi producono un profondo disorientamento cognitivo, strategico e pratico, sconvolgendo la visione sedimentata del mondo da parte degli attori politici e sociali e aprendo uno spazio per la proliferazione (variazione) di diverse interpretazioni sulle cause e i rimedi alla crisi stessa. Solo alcune di queste interpretazioni vengono selezionate (selezione) e si traducono in strategie e politiche economiche; di queste, solo alcune si dimostrano efficaci e vengono effettivamente mantenute (ritenzione), e diventano la base per le iniziative strategiche e politiche private e pubbliche per gestire la crisi e/o superarla.

Agli immaginari si collegano dei *knowledge brands*, modelli per l'azione costituiti da un insieme di discorsi e pratiche, anch'essi strumenti egemonici di costruzione del significato, che sono tradotti in ricette di policy e metodologie pragmatiche, consentendo quindi l'azione. Sono spesso promossi da organizzazioni internazionali (come l'OECD, il WEF, la WB), istituti di ricerca, think tanks, "guru" accademici o consulenti di grido, che rivendicano una conoscenza unica di un settore strategico o

> politico rilevante e la traducono pragmaticamente in simboli, ricette e strumenti politici (trans-)nazionali che affrontano problemi e dilemmi politici. A questo proposito, un *knowledge brand* è una manifestazione e una condensazione transnazionale del potere istituzionale, organizzativo e discorsivo nel circuito conoscenza-consulenza-politica […].
> Circolando a livello transnazionale, i *knowledge brands* offrono modelli semplici ma flessibili che possono essere sviluppati e ricontestualizzati in base alle mutevoli condizioni globali, regionali, nazionali e locali. Questo avviene attraverso strumenti specifici come benchmarking, reports e indici.
> Riassumendo, la CPE fornisce strumenti utili per inserire nello studio del potere e dei rapporti tra economia e politica l'analisi delle dinamiche proprie della sfera culturale. Queste sono ritenute importanti da un lato dal punto di vista ontologico – poiché cultura e semiosi sono co-costitutive dell'esistenza sociale e devono essere tema o fenomeno da studiare (discorsi, identità, eventi, pratiche, processi, istituzioni, culture e subculture, vita quotidiana), quindi oggetto di ricerca. Da un altro lato, sono importanti da un punto di vista metodologico, poiché gli aspetti culturali delle relazioni sociali offrono una prospettiva, un punto di ingresso, per spiegare anche altri aspetti del mondo sociale, compreso il potere. Allo stesso tempo, non tutto può essere ricondotto alla dimensione semiotica, poiché i processi materiali e immateriali sono co-costitutivi delle relazioni sociali e politiche».

Per capire le implicazioni delle politiche scientifiche e tecnologiche e, al loro interno, dei programmi finalizzati ad innovazione e trasferimento tecnologico, Tommaso ha provato a combinare questa analisi del senso e degli specifici processi di creazione di significato con lo studio delle relazioni economiche e politiche e del loro radicamento sociale. In particolare, il suo intento è stato quello di ricostruire il processo di affermazione dei discorsi sugli ecosistemi dell'innovazione, come concettualizzazione egemonica delle relazioni tra università e ricerca da un lato e imprese e mercato dall'altro, in uno specifico contesto territoriale di analisi, ossia su scala urbana e metropolitana La ricerca è stata condotta nel periodo 2022-2024, utilizzando un metodo qualitativo di rilevazione empirica basato sulla realizzazione di interviste semi-strutturate (15) con alcuni tra i principali attori coinvolti nel progetto *Technopole*, sull'analisi di artefatti discorsivi di diversa natura, dai documenti di policy ai documenti di indirizzo strategico nel campo dell'innovazione e del trasferimento tecnologico, prodotti da attori politici ed economici coinvolti nella governance del progetto e, più in

generale, nella *political economy* di Roma. Per analizzare i documenti di policy dell'Unione europea e nazionali, relativi al PNRR, Tommaso ha usato gli strumenti concettuali della *Critical Discourse Analysis*.

Le conclusioni che Tommaso ha potuto raggiungere, esposte nella parte finale della tesi, sono – come ci dice esplicitamente – provvisorie, parziali e ipotetiche e "richiedono ulteriori approfondimenti sia in termini di sviluppo teorico che di analisi empirica". Sebbene si tratti di un processo ancora nelle fasi iniziali di sviluppo, il *Technopole* di Roma evidenzia già caratteristiche innovative, se messo a confronto con il sistema esistente di relazioni tra attori, e la creazione del relativo ecosistema di innovazione può essere un fattore scatenante trasformazioni più ampie, sia una lente attraverso la quale comprendere queste trasformazioni. Allo stesso tempo, si sta rivelando un'opportunità per concretizzare, coordinare e sistematizzare azioni precedentemente immaginate, comunicate e messe in pratica dai vari attori coinvolti nel processo analizzato, testimoniando così lo stadio di affermazione dell'immaginario legato agli ecosistemi di innovazione.

Tommaso ipotizzava che il PNRR avesse aperto una finestra di opportunità – secondo la concettualizzazione del *Multiple Stream Framework* di J. Kingdon – per realizzare a Roma un progetto già concettualizzato, nei suoi aspetti principali, dagli stakeholder interessati, con l'obiettivo di concretizzare discorsi già articolati e accordi già avviati, fra gli industriali, le università la Regione Lazio, formando così parte delle agende di più attori anche prima della crisi da COVID-19. Il *Technopole* si è sinora dimostrato un catalizzatore, che sembra facilitare l'integrazione sistematica di queste pratiche di collaborazione e trasferimento tecnologico. La *critical juncture* della risposta a una crisi imprevista, mettendo a disposizione risorse finanziarie e di legittimazione politica e istituzionale, ha reso possibile l'incontro di *problem stream*, *policy stream* e *political stream*.

Emerge poi un aspetto specificamente territoriale che Tommaso avrebbe voluto approfondire, relativo all'impatto del *Technopole* e del PNRR sul "regime urbano" di Roma. Le azioni promosse per la ripresa dalla crisi hanno riattivato un flusso di spesa statale per investimenti a Roma, una risorsa e un collante dell'economia urbana (tra interessi pubblici e privati; tra sistemi politici locali e nazionali) che era mancata nel periodo 2010-2020. Dalla discussione del materiale empirico raccolto emerge – anche se in modo incompleto e che Tommaso si proponeva di estendere – la relazione tra politiche e strategie e l'immagina-

rio dell'innovazione tecnologica ed economica da un lato e, dall'altro, le aspettative annidate nel sistema di interessi materiali del territorio romano e regionale circa la possibilità di trasformare alcune delle caratteristiche sedimentate del sistema produttivo romano, individuando nel trasferimento tecnologico un motore di questa trasformazione. Una trasformazione di cui la ricerca di Tommaso ha fatto emergere le dimensioni materiale e culturale, di cui gli attori della conoscenza – in particolare le università – sono i vettori. Il *Rome Technopole* – con il ruolo di leadership di Sapienza al suo interno che testimonia lo spostamento delle università verso un modello imprenditoriale e il loro ruolo crescente nello sviluppo locale – è interpretato dagli attori del *policy network* come un enzima, il lievito che avvia e consente lo sviluppo di altre iniziative simili, alimentando ulteriormente la legittimazione sociale e politica necessaria attraverso la condivisione di visioni e linguaggi, così come l'investimento realizzato è stato sia materiale, sia simbolico. Il processo appare incompleto perché, come sostiene Tommaso "gli esponenti delle imprese lamentano una difficoltà da parte delle istituzioni universitarie ad adottare discorsi e pratiche adeguate al modello aziendale" ed emergono anche alcune difficoltà nell'allineare i modi di pensare e di agire nel creare una coalizione di attori che possa avere una sua rilevanza anche nel più ampio contesto dalla *political economy* romana.

Questa prospettiva di analisi critica delle politiche, con particolare riferimento alla scala urbana e all'articolazione tra la dimensione semiotica e materiale testimonia dell'incontro, nell'esperienza di Tommaso, della formazione e della iniziale produzione scientifica con l'impegno civile e politico. Per quanto riguarda il primo aspetto, nei pochi anni che ha avuto a disposizione Tommaso aveva pubblicato diversi articoli e fatto presentazioni in convegni nazionali e internazionali (cfr. elenco alla fine del volume), in ottimo numero, considerando lo stadio raggiunto nel suo percorso. Si sarebbe tentati quindi di sintetizzare la biografia di Tommaso studente con un termine la cui diffusione e consolidamento nel gergo e nel senso comune accademici sono però dovuti a processi che Tommaso criticava con convinzione. Si tratta di trasformazioni regolative e pratiche semantiche che hanno concretizzato la neoliberalizzazione dell'università e della ricerca scientifica italiane in una logica di affermazione individuale attraverso la competizione: Tommaso sarebbe probabilmente classificabile come uno studente e un giovane studioso "eccellente". Starebbero a dimostrarlo, seguendo

quella logica, i pieni voti della laurea in Sociologia e della laurea magistrale in Scienze sociali applicate, il percorso di dottorato nel curriculum *Sociology and applied social research*, le esperienze internazionali – l'esperienza di mobilità Erasmus presso la *Universidad Complutense de Madrid*, *Facultad de Ciencias Políticas y Sociología*, durante la laurea magistrale, il soggiorno di studio presso la università di Lancaster (*Environmental Center*) durante il dottorato. A queste esperienze Tommaso ha affiancato la partecipazione ad altre ricerche, collaterali al suo impegno di dottorato su diversi aspetti della governance urbana e dell'innovazione tecnologica, lavori di gruppo nei quali aveva evidenziato doti di apertura, collaborazione e affidabilità. E inoltre prima ancora di concludere questo tratto di cammino Tommaso aveva avviato le citate attività nell'ambito di un assegno di ricerca.

Preferiamo invece evidenziare un altro aspetto del valore già dimostrato da Tommaso come studioso in formazione: una specifica torsione applicativa della sua curiosità scientifica e culturale, animata dalla volontà di capire le caratteristiche, i meccanismi del potere nella società contemporanea per affinare la propria capacità critica di fornire contributi originali non solo alla discussione accademica, ma anche alle lotte per contrastare gli effetti sociali e culturali peggiori del capitalismo contemporaneo. La sociologia politica gli aveva fornito un ambiente di teorie e metodi privilegiato, ma Tommaso cercava di non essere confinato dai recinti accademici ed era curioso di conoscere approcci diversi e cercare di metterli in connessione. Nella sua lettera di motivazione per il concorso di accesso al Dottorato di ricerca (2021) scriveva:

> «I am moved by the desire to deepen my knowledge about scientific theories and methods, but also about tools and techniques of empirical analysis, and to acquire greater autonomy in planning and carrying out research, both on a local, national and international scale. In particular, I am attracted by the possibility offered by the new doctoral school to critically reflect on theories and models, as well as on the intersection between different disciplines. I believe that this is the only way to build original interpretative models to understand the social, political and economic trends of complex societies, to conduct investigations with high methodological quality and to propose convincing interpretations of the complexity of social, economic, political and cultural phenomena of contemporary societies. Furthermore, from my point of view, the possibility of producing original and applicable scientific results is crucial».

"Applicare risultati scientifici" nella sua breve esperienza ha significato soprattutto collegare oggetti di ricerca, teorie critiche e partecipazione all'azione collettiva. Utilizzando le prospettive teoriche che aveva frequentato, infatti, Tommaso si riprometteva, a partire dalla sua esperienza personale e diretta, di fare della teoria una risorsa cognitiva e di orientamento dell'impegno e dei conflitti per la giustizia sociale. Allo stesso tempo voleva utilizzare i fenomeni sociali – il conflitto ma non solo – come oggetti per capire meglio le teorie sociali e metterle alla prova.

Tommaso aveva svolto il Servizio Civile Nazionale presso l'associazione "Senza Confine", fornendo assistenza presso lo sportello di assistenza legale, rivolto principalmente ai cittadini stranieri e migranti e svolgendo anche attività di accompagnamento di questi utenti presso gli uffici pubblici territoriali. Ancora più significativa del suo impegno civile e politico, però, è stata la sua partecipazione al progetto di *Communia*, un'esperienza romana nata nel 2013, quando all'interno del ciclo di occupazioni dello "tsunami tour" promosso dal movimento per il diritto all'abitare venivano occupati locali i locali della ex Piaggio (scalo di San Lorenzo), lasciati in condizioni d'abbandono e fatiscenza. I locali sono al centro di un quadrante urbano paradigmatico dal punto di vista della speculazione immobiliare, che sembra scommettere sull'abbandono e sulla più facile successiva valorizzazione a scopi privati. Tommaso ha partecipato al ripristino materiale degli spazi, che sono stati messi a disposizione di varie attività di mutuo soccorso e autorganizzazione sociale: una scuola di italiano, laboratori di musica, teatro, Yoga, una "sartoria migrante", sportelli sindacali e soprattutto Sharewood, l'aula studio autogestita dai collettivi studenteschi della Sapienza. In particolare, Tommaso ha animato questa aula studio e il Coordinamento dei Collettivi Universitari, ha collaborato ad allestirne e catalogare la copiosa biblioteca (circa 5.000 titoli), ad organizzarne i servizi e le discussioni politiche. Essendo state svolte durante il percorso di studio, queste attività hanno ispirato una riflessività che Tommaso ha cercato di convertire in ricerca teorica, per capirne le radici, la collocazione nei processi di trasformazione sociali – nei loro risvolti interdipendenti di carattere economico, politico e culturale – e le potenzialità di sviluppo nel senso della democratizzazione e dell'equità sociale. È più facile così comprendere i motivi della scelta dei temi per le sue tesi di laurea.

Quella per il titolo triennale (2016) è stata per Tommaso la prima vera opportunità di cimentarsi con la sfida di capire e usare appropria-

tamente teorie e metodi scientifici. Nella tesi, dal titolo "Depoliticizzazione e ri-politicizzazione del sociale. La pratica della riappropriazione di spazi", Tommaso ha voluto impadronirsi delle teorie sui processi di de-politicizzazione e ri-politicizzazione e della società e dell'azione pubblica e sugli effetti che essi possono esercitare sul funzionamento dei processi democratici, incontrando varie tesi, come quella della "post-democrazia" di C. Crouch. Utilizzando queste teorie, ha messo a fuoco alcune dinamiche sociali attivate dalla depoliticizzazione, analizzando specifiche forme di resistenza, pratiche di mutualismo e solidarietà attraverso le quali componenti della società civile avanzano domande radicali, quella che Tommaso ha interpretato come "ripoliticizzazione" in forma autonoma del sociale. In questo primo lavoro aveva provato ad applicare *frame* interpretativi e piste di sviluppo analitico della sociologia politica a un caso specifico: il progetto di riappropriazione portato avanti dai collettivi studenteschi dell'università Sapienza a Roma, attraverso l'occupazione e l'autogestione di un'aula studio. Su questo caso aveva svolto una pre-analisi, finalizzata a mettere a punto alcune domande finalizzate a redigere il compiuto progetto di ricerca sociologica con cui si concludeva la tesi: dove risiede e come si esplicita, se esiste, il carattere politico delle nuove forme di azione collettiva? Con quali strumenti e pratiche gli attori in esse coinvolti cercano di portare avanti il loro progetto di ripoliticizzazione delle relazioni e dei rapporti sociali?

Pur trattandosi di una tesi triennale, Tommaso si era collocato in una prospettiva che avrebbe approfondito tre anni dopo in modo più sistematico per scrivere il saggio "I movimenti sociali della contemporaneità" nell'handbook già menzionato (Carocci, 2024). In particolare, si tratta di un approccio che, usando le sue parole,

> «analizza nuove pratiche di resistenza sociale attraverso le quali gruppi autorganizzati tentano di contrastare le conseguenze sociali e ambientali delle politiche neoliberiste e di costruire configurazioni socioeconomiche alternative, sulla base di principi come il mutualismo e la solidarietà tra le persone e di una connessione più sostenibile con l'ambiente. Di queste pratiche e attori fanno parte le occupazioni abitative (*squats*) in ambito urbano, l'*urban gardening*, i "Gruppi di Acquisto Solidale", le reti del cibo alternative, il movimento dei piccoli produttori e altre azioni di impronta mutualistica che puntano a creare un'alternativa dal basso alla ritirata del welfare state. Queste pratiche sono state interpretate come *azioni sociali dirette* che, anziché chiedere allo Stato, puntano

> a trasformare direttamente aspetti specifici della società. Per quanto forme di azione simili abbiano fatto parte del repertorio dei movimenti sociali anche in precedenza, le crisi economiche ne aumentano la portata e allargano le fasce di popolazione coinvolta. I mezzi utilizzati incorporano e rispecchiano i fini che gli attivisti vogliono perseguire. In questo modo gli ideali politici sono attualizzati "qui ed ora", cercando di prefigurare un modo di vivere oltre il capitalismo. Il focus delle analisi sociologiche, quindi, è sul potere trasformativo diretto dell'azione stessa messa in campo, che spesso è affiancata dall'espressione di rivendicazioni politiche.
>
> Questa prospettiva […] ha riportato al centro dell'analisi i fattori politico-economici e il modo in cui influenzano i movimenti sociali: inibendo o facilitando la formazione di nuove identità e solidarietà collettive, di classe o no; determinando l'equilibrio delle forze di classe nella società e all'interno dei movimenti stessi, modellandone obiettivi e strategie; condizionando ideologie e linguaggi culturali. […] Una maggiore attenzione ai meccanismi causali associati alle dinamiche del capitalismo potrebbe quindi migliorare la capacità esplicativa di molte delle attuali analisi dei movimenti sociali. La "produzione" umana, infatti, non è solo "materiale", la fabbricazione di cose, ma anche la produzione – o "costruzione" – di relazioni sociali e di forme simboliche, nonché la riproduzione degli stessi produttori. La prospettiva, certamente sfidante, che emerge per le scienze sociali è rintracciare ed evidenziare le interconnessioni tra questioni specifiche e particolari repertori di azione, organizzazione e comprensione di specifici movimenti e le più ampie relazioni sociali di produzione che – più o meno esplicitamente – essi affrontano.

Nel frattempo, nella tesi di laurea magistrale intitolata "Teoria della riproduzione sociale. Ipotesi e approccio di ricerca" (2019) Tommaso aveva voluto invece ricostruire la storia e le caratteristiche della *Social Reproduction Theory*, un approccio materialista alle relazioni sociali di subordinazione legate al genere nella società capitalista. Questo obiettivo gli ha dato la possibilità di padroneggiare da un lato le letture della riproduzione quotidiana e generazionale della forza-lavoro che sostiene il processo di accumulazione nel sistema capitalistico e, dall'altro, quelle sulla relazione strutturale tra le diverse dinamiche di oppressione di genere, razza e sessualità e la produzione capitalistica di plusvalore. Così, ha approfondito alcune posizioni nel dibattito sull'uso delle categorie del pensiero critico, in particolare dell'economia politica marxiana, per l'analisi dell'oppressione di genere nella società capitalista. E poi da un lato la teoria dell'intersezionalità, emersa nel contesto del femminismo nero americano intorno all'idea della si-

multaneità di molteplici forme di oppressione; dall'altro, il femminismo della riproduzione sociale, in più stretta connessione con la teoria marxista, che riformula concetti come economia, lavoro e classe. Con una preoccupazione circa gli sviluppi empirici della *Social Reproduction Theory*, come approccio e metodo per analizzare le dinamiche di genere e razza e i cambiamenti nella riproduzione sociale dovuti alla globalizzazione dell'economia e all'affermazione del neoliberismo.

Questo interesse di Tommaso per i temi della riproduzione sociale era stato generato anche dall'esplosione, nel 2016, del movimento femminista e transfemminista *Non Una di Meno*. Non tanto diversamente, l'interesse per le strategie di accumulazione nei contesti urbani e le loro componenti di carattere non solo economico e politico, ma anche culturale è derivato dall'osservazione dell'agenda politica di Roma e della posizione al loro interno dei processi di trasformazione urbana e di valorizzazione delle risorse territoriali. Occuparsi di *Rome Technopole* e dei suoi potenziali impatti è stata un'impresa di ricerca finalizzata a capire un nuovo tipo di cambiamenti che l'innovazione al centro di questo progetto PNRR stava inducendo nella *political economy* e nel "regime urbano" di Roma, in cui le trasformazioni spaziali ed economiche si legano fa loro nella transizione fra strategie di accumulazione la cui riproduzione nel tempo attraversa una fase di incertezza a partire dalla fine del ciclo di investimenti pubblici per "Roma Capitale" (1990-2010).

Questa ricostruzione, però, è rimasta incompleta. Dopo la fase della valutazione della tesi, Tommaso avrebbe avuto a disposizione fino a sei mesi per integrare la rilevazione empirica – e a questo fine aveva già impostato l'analisi sistematica degli articoli pubblicati nelle pagine locali da tre testate (la Repubblica, Il Messaggero, il Corriere della Sera – per ricostruire i processi di comunicazione e di formazione di un senso condiviso nella sfera pubblica e nella società a Roma intorno al processo di innovazione del *Technopole*, ricercandovi gli immaginari e i *knowledge brand* di riferimento. Questa parte di rilevazione avrebbe ampliato il raggio di quella già effettuata. Infatti, dai documenti analizzati e dalle interviste realizzate era emersa la costruzione sociale degli ecosistemi come obiettivo centrale delle politiche di ricerca e innovazione e la completa aderenza ai sottostanti sistema di immaginari, *knowledge brand* e modelli normativi dell'innovazione da parte dei componenti di questo sistema di azione. In particolare, attori politici, universitari e del *business* locale concepiscono il ruolo delle università come oggetto di un cambiamento necessario e inevi-

tabile che deve adattarle alle esigenze del mercato, intensificando il loro legame con le imprese.

Questa torsione dell'istituzione universitaria alle esigenze del mercato e degli interessi specifici che vi si muovono, convertiti in "interessi generali" anche per effetto delle politiche pubbliche volte alla costruzione degli ecosistemi di innovazione, è stata messa da Tommaso al centro di una discussione critica, i cui risultati però non ha fatto in tempo a riordinare e sviluppare come aveva progettato. Come si è detto, l'obiettivo ulteriore era quello di cambiare la logica di esposizione. Quella che si può leggere nelle prossime pagine corrisponde a un formato più "scolastico" e adatto a una tesi di dottorato da "difendere" in sede di esame, in cui ci si aspetta sì la dimostrazione di capacità critica ma, in primo luogo della conoscenza approfondita di teorie e strumenti interpretativi e metodologici, oltre che della capacità di adattarli ai propri obiettivi conoscitivi. La versione programmata del testo sarebbe stata più focalizzata sulla risposta alle domande di ricerca e su un'interpretazione originale dell'oggetto studiato, in questo caso le connessioni fra la politica di innovazione tecnologica resa possibile dal PNRR e il modello di accumulazione e la *political economy* di Roma.

Non c'è stato tempo, e questo non ha solo privato la produzione di conoscenze su Roma di un contributo, forse piccolo, ma significativo nella sua originalità. Ha anche tolto a chi scrive questa prefazione la soddisfazione di vedere completata e pubblicata la prima opera monografica di un giovane studioso insieme al quale ha firmato saggi e articoli e del quale ha potuto seguire la crescita intellettuale non solo con l'impegno necessario e dovuto per il ruolo accademico, ma anche con un supplemento di affetto ed empatia, facilitato dalle doti umane di simpatia, modestia e ironia di Tommaso. Queste qualità hanno fatto di lui un compagno di lavoro decennale, in cui lo studente si è via via trasformato anche in un amico più giovane. Con lui è stato possibile condividere non solo la fatica e la serietà del lavoro scientifico, ma anche discussioni politiche, riflessioni sulle esperienze personali, oltre una comune passione che ci ha avvicinati ulteriormente: quella per la A.S. Roma, un ingrediente che ha colorato l'inserimento di Tommaso nella nostra città. Roma ha accolto lui e altri studenti non solo alla Sapienza e in altri atenei, ma anche negli spazi dell'impegno civico, delle lotte sociali e perfino nei simboli sportivi dell'identificazione collettiva con la città e la sua storia, come dimostra il ricordo esposto dalla "sua" Curva Sud – *Tommaso lives forever* – nel derby del 5 gennaio 2025, vinto pochi giorni dopo la sua scomparsa.

The Rome Technopole as a local innovation ecosystem: a Cultural Political Economy approach

Tommaso Fasciani

PhD School in Social Sciences and Economics
Sapienza University of Rome

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Tommaso Fasciani, PhD School in Social Sciences and Economics – Sapienza University of Rome

Contents

Introduction

This research investigates the relationship between innovation policies – in particular public initiatives aimed at building and strengthening local innovation ecosystems – and accumulation strategies, from a critical policy analysis perspective and with particular reference to the urban scale and to the articulation of semiotic and material dimensions.

Within this general framework, the analysis focuses on the specific context of Rome's system of political economy, with the aim of understanding what possible changes can be brought about by the implementation of a policy within the National Recovery and Resilience Plan (NGEU): the realisation of Rome Technopole (RT) innovation ecosystem, a centre for research and technology transfer. This is a relevant initiative in the Roman context due to its innovative nature, involving a plurality of political, knowledge and economic actors and interests, in an ecosystemic perspective, to promote technology transfer processes and strengthen links between universities and industry, and thus contribute to urban economic development. Of this innovation, it is also important to understand the transformative potential of a development model that – even though during the last thirty years has incorporated new elements at the economic, political and social levels, drawing on the discursive and material repertoire of the Knowledge Based Economy (KBE) – has historically been predominantly based on the hegemonic role of other sectors (real estate business, construction, land rent) over manufacturing industry and highly dependent on public spending programs.

The general frame within which the research is situated considers research and technological innovation as fundamental components of the reproduction of contemporary capitalism. In particular, innovation

ecosystems are the prevailing perspective within academic discourse and the dominant paradigm to which research and innovation policies at all levels of governance are oriented.

The initial chapter examines the way in which the subject of technological innovation and the role of science and technology within the context of economic growth have been addressed in the field of economic thought. In particular, reference is made to the thought of some exponents of the classical approach and the theorisation of Joseph Schumpeter, as the roots and foundations of subsequent theoretical and normative developments on National Innovation Systems (NIS) and innovation ecosystems. Subsequently, conceptualisations concerning NIS, innovation ecosystems and the Triple Helix model are discussed with reference to the main bibliography, that shows a highly normative nature. The final section concerns the role of the state as a central actor in the models presented, with particular reference to the prevailing conceptualisation of the "entrepreneurial state".

The research employs the concepts and tools of Cultural Political Economy (CPE), a theoretical project that examines how discursive and material dimensions are articulated and impact on specific sets of social practices. It combines concepts from critical political economy – particularly the Regulationist School and materialist theories of the state and governance – with critical semiotic analysis. In order to observe the field of technological innovation as a complex object of economic and political governance, an analysis based on the theoretical principles of CPE facilitates a deeper examination of the discursive features of capitalist social relations and how they are intertwined with structural features in the production of hegemony and hegemonic strategies. So, critical policy analysis can draw on the conceptual repertoire of CPE, particularly with regard to the role of hegemonic imaginaries in conditioning policy paradigms.

The second chapter presents an analysis of the core elements of this approach. In particular, reference will be made to the roots of the latter in the philosophy of science of Critical Realism – from which CPE draws fundamental assumptions on both the ontological and epistemological aspects – as well as in the theorisations of the Regulationist School. Furthermore, the implications for the social sciences, with regard to the conception of the relationship between structure and agency, will be discussed. After that, the fundamental concept of the imaginary is addressed, and the ways in which the tools of CPE can also

be applied to the field of research and innovation are discussed. The final section considers how CPE has conceptualised the emergence of the KBE as a dominant imaginary, along with those of competitiveness and globalization, within contemporary capitalism, particularly relevant in the field of science and technology policies. This imaginary has informed and continues to inform the structural reforms and strategic reorientation of Higher Education and Research (HER), notably through the actions of supranational bodies such as the OECD and the European Commission.

The application of CPE's young theoretical framework to concrete analysis calls for a methodological discussion. The third chapter initially delineates the attributes of the CPE heuristic scheme and the research agenda it proposes, based on the role of four strategic selectivities. After that, a number of critical remarks directed towards the CPE heuristic scheme by social science scholars from a variety of academic disciplines are presented. These remarks pertain to the efforts to operationalise CPE in empirical research, with due consideration given to the interconnections between the semiotic dimension and its foundation in the materiality of social relations and everyday life. In particular, the exclusive reliance on the Critical Discourse Analysis (CDA) approach is criticised. These critical observations, however, are directed towards a refinement of the empirical research tools within the framework of CPE. They contain interesting hints and proposals for the construction of the operationalisation process, that I have tried to include in my framework of analysis and interpretation, presented in the third and final section of the chapter. The latter section is dedicated to the building of a research agenda and a framework for the analysis of interviews and discursive artifacts that take into account both the ontological and epistemological issues of CPE and critical observations. The research is carried out using a methodology based on interviews with the main actors involved in the RT project, the analysis of local and national media, the analysis of discursive artefacts of different nature, from policy documents to strategic direction documents in the field of innovation and technology transfer, produced by political and economic actors involved in the governance of the Technopole project and, more generally, in the political economy of Rome.

The fourth chapter focuses on the main characteristics of Rome's political-economic system and, in particular, on some ambivalent aspects of its evolution over the last thirty years. Although historically

based on the hegemonic role of low innovation economic sectors, the city's development model has also incorporated new elements at the economic, political and social levels, that highlight the penetration of the KBE imaginary and outline a context that presents challenges and opportunities for policy-making on research and innovation. Technological innovation is now one of the most important areas of investment, both from the symbolic and material point of view, through discourses and concrete actions. The RT project, presented in the second part of the chapter, fits into this context.

The fifth and final chapter presents the findings of the research, resulting from interviews conducted with the actors involved in the Technopole project. The data were organised and discussed on the basis of the three main dimensions of analysis identified during the operationalisation phase, which were considered crucial for the interpretation of aspects relating to the imaginary. These aspects include: the development of the action; the characteristics of Rome's political economy system as result from a research literature review and as perceived by its main actors; the changes in the institutions of HER.

Although it is a process in its early stages of development – on which only soft hypotheses can be made, of a partial and exploratory nature, which require further investigation, both in terms of theoretical development and empirical analysis – the Technopole of Rome already shows innovative features, if compared to the existing system of relations between Rome's political economy actors, and it can be a trigger, a lens through which to understand wider transformations. At the same time, it is turning out to be an opportunity to concretise, coordinate and systematise actions previously imagined, communicated and already put into practice by various actors involved in the process analysed, thus testifying to the process of affirmation of the imaginary related to innovation ecosystems.

From a theoretical point of view, the analysis carried out in this research intended to align with the tenets of critical policy studies. The concepts and tools of CPE are employed to situate the process of innovation analysed in a broader context of political economy, with reference to issues such as power, hegemony, and the state, and to consider the interconnection between its semiotic and material dimensions. This approach may enable a more nuanced understanding of policy processes than classical models of analysis, which are useful for understanding the "how" of policy development – and in the case of

Technopole this is particularly true with regard to the model of Multiple Stream Approach – but may be less effective for formulating hypotheses on the "why". In order to achieve this, CPE employs the tools of political economy, specifically a critical political economy, which challenges the conditions of existence and reproducibility of capitalism – a central issue also for the RS. A critical political economy that is able to take the cultural turn seriously, from an ontological and epistemological standpoint, and integrate the tools and concepts of critical semiotic analysis into the analysis in a coherent manner.

Beyond the application of this theoretical frame to the case of Rome, it is a highly ambitious task that extends beyond the scope of this research. It was not the intention to propose a comprehensive and conclusive "Cultural Political Economy of…", and specifically in this case "…of local innovation ecosystem". Rather, it was to use the tools that CPE provides for the critical analysis of policies, specifically those policies designed to build and reinforce local innovation ecosystems. At the same time, I tried to develop a framework for analysis based on the tenets and heuristic scheme of CPE, modelling it according to the object and context of analysis, the research questions, and some considerations regarding epistemology and methodology which are critical with respect to the CPE approach. This framework, when suitably revised and improved, may perhaps have some utility on a more general level, to investigate the formation of strategies on an urban scale and, ultimately, the theme of hegemony.

1. The political economy of research and technological innovation

1.1. Classical foundations

Technological innovation, and more generally the role of science and technology within economic development processes, has always been a fundamental subject of debate in economic thought. Particularly, "the relationship between technological change e institutional development" has been and still is "one of the main axes of debate and urgent research topics" (Trincado Aznar and Lopez Castellano 2023). The importance and effects of technological change on the economic system, including its endogenous nature, were early recognized by economists of the classical approach[1]. Generally, they focused on its effects on productivity, labor specialization, and capital accumulation (Motta and Moreno 2020).

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[1] In this chapter, the focus is on mainstream economic thought, and its classical foundations. All this mainstream view of innovation, which emphasizes the supply side of innovation and economic ideas led by science and technological advances, has faced criticism from heterodox approaches to decision-making and path dependency. These include Marxian Economics, Feminist Economics, Institutional Economics, and Keynesian Economics. These perspectives shift the focus to the demand side of the economy, examining how power dynamics shape economic relationships and economic systems (Trincado Aznar and Lopez Castellano 2023).
In particular, Marx's theorising on technological innovation, on the role of machines and automation in capitalist development, has been and still is an absolutely central issue, the subject of debates between scholars with different perspectives on the main categories of Marxian thought, and has given rise to critical reflections on the mainstream view on a wide range of issues. A detailed treatment of these aspects, apart from requiring the space they deserve, would be beyond the scope of this paper, which focuses on the hegemonic configuration, both in the academy and in policy-making, of activities to promote research and innovation and the relations between the actors involved.

Many contributions in the history of economic thought related to the economics of innovation emphasize the significance of the French Economist School, which centres around Richard Cantillon's concept of the entrepreneur. In his "Essay on the Nature of Trade in General" (1755), the Irish economist Cantillon defined the entrepreneur as an individual who purchases production resources at specific prices, organizes them efficiently, and produces a new good that will later be sold at an uncertain price. This characterization positions him as an early advocate of innovation, linking it to the pursuit of profit through production or distribution. Research rooted in the French Economist School has shaped a paradigm that views innovation favourably, highlighting the role of individual action in driving progress.

Adam Smith, one of the founders of the classical approach, argued that division labor increases productivity by enhancing worker skill, saving time, and enabling mechanization. Specialization, he proposed, initiates a process of accumulation of knowledge and skills. Smith's analysis laid the groundwork for theories of technological progress and Research and Development innovation. In "The Wealth of Nations" (1776), written at the onset of the First Industrial Revolution, Smith examined how mechanization affects specialization and the division of labor, emphasizing three productivity boosters: worker skill, time efficiency, and mechanization. As new techniques and machinery emerged, Smith observed that specialization through labor division became more achievable and consistent, allowing knowledge and skills to accumulate. This accumulation became the basis for innovation and long-term economic growth. His focus on specialization can be seen as an early foundation for theories of technological progress and innovation, linking labor division and knowledge accumulation to the development of new technologies and economic growth (Nelson and Winter 1982).

Together with Adam Smith, and critical of some of his positions, Friedrich List contributed to the understanding of the fundamental concept of national innovation systems. List authored several influential works, notably the *Outlines of American Political Economy* (1827), where he advocated for a strong governmental role in driving economic development, and his seminal work, *The National System of Political Economy* (1856). Central to List's theory is the support for protecting "nascent industries" and his critique of Adam Smith's endorsement of a free trade approach. Unlike Smith, who believed that open markets

benefited both advanced economies like England and developing ones like Germany, List argued that young, emerging industries in their early stages – characterized by limited infrastructure, knowledge, and experience – struggle to compete against well-established foreign industries. He saw these nascent industries as crucial for a nation's future economic growth and argued that government support was essential to help them develop and compete internationally. According to List, such industries face unique challenges, including restricted access to capital, underdeveloped infrastructure, low knowledge accumulation, and limited expertise and experience, which make them especially vulnerable. In this regard, List underscored the role of national institutions in fostering what he termed "mental capital" – the accumulation of knowledge and skills that fuel economic growth. This perspective contrasts sharply with the laissez-faire principles and Smith's concept of the "invisible hand".

In his work, List anticipated several key aspects of the modern National Innovation System by more than a century. He emphasized the crucial role of education and training institutions, especially in generating scientific and technical knowledge. He also highlighted the need to assimilate and adapt imported technologies, stressing the importance of knowledge accumulation and prioritizing national strategic industries based on internal strengths and developing sectors. List saw the state as essential in coordinating policies that support long-term industrial and economic growth, with a focus on attracting and learning about new technologies and their applications. He argued that the state plays a pivotal role in fostering innovation by funding research and development, safeguarding intellectual property rights, and encouraging the spread of new technologies and ideas. He also underscored the strategic value of integrating imported technology with domestic activities and advocated proactive interventionist policies to drive technological and knowledge growth. According to List, an effective national innovation system would require a coordinated partnership between the state, the private sector, and academic institutions. List identified a robust national system as essential for innovation, described a strong national innovation system as the collection of institutions, policies, and relationships that facilitate the development and spread of new technologies and ideas. His pioneering concepts regarding national innovation systems and the state's role in promoting innovation remain influential in contemporary economic policy

discussions. List's focus on the significance of innovation and the necessity for collaboration among the government, private sector, and academic institutions has gained broad acceptance (Martinez Rojo 2023).

Among the early forerunners of the concept of national innovation system there are also Johann Heinrich von Thünen and Charles Babbage (Martinez Rojo 2023). The former laid the groundwork for localization economics in his works (1960; 1966), while earlier theorists of economics and technological change largely overlooked the significance of spatial considerations. Von Thünen was a pioneer in this area, notably portraying the entrepreneur as a key figure who bears risk and acts as an innovator. He is recognized for advocating the use of observation as a tool for economic analysis and was one of the first to define the entrepreneur as the "animal spirit" driving the innovation process and overall economic development. Similarly, Charles Babbage discussed several essential aspects of national innovation systems in his writings (1830; 1832). A central theme in his work is the interconnectedness of industry, the education system, and scientific development, all operating within a shared institutional framework. Babbage argued for government intervention, asserting that state funding for science and research is necessary when private incentives fall short. He emphasized the need for what he termed "peculiar institutions" to promote scientific knowledge and foster innovation. Babbage recognized then the importance of institutions that facilitate the application of inventions along with production and marketing, highlighting that innovation stems not from individual brilliance but from a collaborative process involving a network of individuals, organizations, and institutions.

Although the topic has been addressed since the times of Classical Economics, the marginalist-neoclassical approach initially gave it little consideration, limiting the analysis of the exogenous aspects of technological change in relation to the supply functions, from both microeconomic and macroeconomic viewpoints (Garcia Sanchez et al. 2023). The focus on economic equilibrium effectively diverted attention from the issue of technological innovation. It wasn't until the latter half of the twentieth century that Solow (1956, 1957) and Abramovitz (1956) revisited the influence of technological change while estimating growth sources, revealing that more than half of the observed growth was attributed to factors other than capital accumulation and labor. This prompted a renewed focus on technological change as the un-

explained component of growth. Subsequently, the approach emphasized issues such as incorporating technological change into an aggregate production function, improving the measurement of capital and its various components, and refining the results of Solow and Abramovitz to lessen the significance of the "residual" by broadening the set of explanatory variables, including human capital (Mankiw et al. 1992). The main debate within this framework revolved around distinguishing between financial capital and technical-productive capital, the impact of technology on the replacement of technical-productive capital, and how interest rates influence the selection of diverse techniques with varying capital intensities (Garcia Sanchez et al. 2023).

Outside the orthodox neoclassical approach, the Schumpeterian vision stood out, proposing a dynamic view of the economy centred on the central role of innovation and the entrepreneur. This perspective adopted a supply-side approach and a pioneering consideration of the endogenous nature of innovation and technological change (which constitutes an essential source of change and instability, generating dynamism) and moves away from neoclassical analysis based on comparative statics and equilibrium search. Thus, it is possible to explain growth and competitiveness (both micro and macro) based on innovation. This is consistent with interpreting competitive advantages as a result of innovation and explaining growth and development differentials as consequences of technological gaps (Garcia Sanchez et al. 2023).

Schumpeter differentiates between five distinct types of innovations: the launch of a new product, the implementation of a new production method, the establishment of a new market, the acquisition of new sources for raw materials or semi-finished goods, and the development of a new organizational structure within industry. However, the Schumpeterian framework is not uniform, it has evolved over time. It is possible to identify two fundamental models within this approach that complement each other. The first model views innovation as a process occurring within a competitive landscape of capitalist entrepreneurs, characterized by inventions and scientific discoveries that are not yet economically quantifiable. The entrepreneur's innovative activity involves recognizing which inventions and new knowledge possess economic potential, implementing them, and transforming them into viable innovations. This process renders older technologies obsolete, which Schumpeter refers to as "creative destruction" (Schumpeter 1934).

The initial perspective of Schumpeter has been further developed in a subsequent model, which is distinguished by the notion that innovations are endogenous (Baumert 2023). In this later model, research and development primarily take place within the R&D departments of large corporations, in a process referred to as "creative accumulation". This shift signifies a move from the earlier focus on the individual entrepreneur's role to an emphasis on collective innovation occurring within large firms. This latter model stems from the conception of the innovation process described in his work *Capitalism, Socialism and Democracy* (1942). In this framework, it is the R&D departments of companies that apply the scientific and technical discoveries made externally. The dynamics of the process after incorporating these innovations will largely resemble those outlined in the first model, although the temporary monopoly resulting from the innovation may extend over a longer period due to the positive feedback occurring between successful innovations and increased investments in R&D. The key distinction between Schumpeter's first and second models is the inclusion of endogenous scientific and technical activities conducted by large companies (Garcia Sanchez et al. 2023).

While the quarter-century following World War II was largely shaped by Keynesian economic theory and policy, the 1980s witnessed the emergence of Schumpeter's ideas. In the realms of macroeconomics and political and academic influence, Friedman and the Chicago School gained prominence over Keynesianism, along with Hayek. The fall of the Berlin Wall and the disintegration of the Soviet Union further solidified this shift. During the 1980s, innovation economics became a central focus for economists and policymakers across various schools of thought. Their objective was to develop an innovation policy and establish an innovation system, where the government played a crucial role, effectively acting as an entrepreneur (Santos Redondo 2023).

The current prevalent approach has emerged from the interplay of various research lines that developed during the final decades of the twentieth century. Grounded in endogenous growth models (Nelson 1997; Romer 1990; 1994), this approach integrates innovation and technological change into economic activity, emphasizing their potential to create increasing returns – stemming from advancements in knowledge and technology – that fuel growth. Conversely, evolutionary models (Nelson and Winter 1982) aim to examine the relationships between patterns of growth and patterns of technological change, which

evolve through interactions among agents possessing different levels of innovation and absorption-imitation capacities, that influence both productive and technological choices. This endogenous-evolutionary approach is enhanced by the systemic approach (Freeman 1974; 1987; 1995; 2002; Lundvall 1992; Nelson 1993), which addresses the legal and institutional context in which endogenous decisions are made and the evolutionary processes that unfold, thereby facilitating an exploration of the connection between micro and macro aspects of innovation processes. The systemic approach revolves around three key components: the system (comprising agents, institutions, and organizations – both public and private – that interact with varying frequency and goals), innovation (involving the identification, utilization, generation, and dissemination of knowledge, along with technological and organizational improvements), and scope (contextualizing geographically – national, regional, or local – and/or on the base of the sector), while also incorporating an evolutionary and dynamic aspect. Variations between systems and their outcomes (be they innovative, growth-oriented, competitive, or otherwise) can largely be attributed to differences in capacities (technological, innovative, absorptive, and social). The current emphasis in the economic analysis of innovation and technological change results from a complex process of conceptual and methodological refinement, viewing innovation as endogenous to the economic system, which creates an evolutionary trajectory for innovation and growth, impacting the entire system (Garcia Sanchez et al. 2023).

1.2. Hegemonic configurations of the University-Industry-Government interactions in innovation

National Innovation System

The economy of innovation and technological change has become one of the most relevant fields of study of economics, especially in recent years. Since the late 1980s of the twentieth century, much attention has been devoted to it, especially around the concept of Innovation Systems and, more specifically, National Innovation Systems and its later evolutions (Martinez Rojo 2023). The National Innovation System framework – the most influential in academic debates and policy making since the linear model of innovation (Rogers 1962) – suggests

that the research system is part of a larger system composed of sectors such as government, university, and industry and their environment, and also emphasizes the relationships between the components or sectors, as the cause explaining the performance of the whole innovation system (Godin 2009). National Innovation Systems have been a subject of intense academic debate for the last decades, and the concept continues to evolve as scholars and policymakers seek to understand the factors that promote innovation and economic growth across nations, regions, and sectors.

The concept of National Systems of Innovation (NSI) emerged as a framework to understand how various actors, institutions, and policies within a nation influence innovation processes. This approach, which views innovation as a collective phenomenon shaped by national characteristics, underscores the role of institutional interactions within a country's unique economic and cultural landscape. Among the foremost contributions on NSI are the works of Bengt-Åke Lundvall (1992), Richard R. Nelson (1993), and Christopher Freeman (1995). While each author's perspective varies slightly, together they offer a comprehensive view of NSI, highlighting its core mechanisms, its dependency on national context, and its importance in shaping economic competitiveness.

In National Systems of Innovation: Towards a Theory of Innovation and Interactive Learning (1992), Lundvall positions NSI as a dynamic and non-linear process centred around interactive learning. He argues that innovation does not occur in isolation within firms but rather emerges through continuous exchanges of knowledge among economic and social actors, including companies, universities, and government institutions. According to Lundvall, these interactions foster learning processes that are essential to innovation. Lundvall introduces the concept of interactive learning as the "engine" of innovation, viewing it as a social process where knowledge and capabilities circulate among various actors. For this to happen effectively, he asserts that institutions must facilitate these exchanges and encourage knowledge-sharing. Thus, in Lundvall's view, each national innovation system is shaped by its unique historical and cultural "path dependency", meaning that the evolution of institutions and innovation policies is inherently influenced by a country's historical development. This framework underscores how NSIs are influenced by national idiosyncrasies, which create distinct innovation practices and strategies in different countries (Lundvall 1992).

Richard R. Nelson's adopts an empirical approach to compare NSIs across different countries. His study emphasizes how institutional differences shape each nation's ability to innovate, proposing that every country's NSI is characterized by a unique configuration of actors and institutions, from businesses and governments to universities and research centres. Nelson's work is a pivotal contribution to understanding how diverse institutional arrangements can impact national innovation outcomes. One of Nelson's key insights is that while innovation occurs across various sectors, effective NSIs rely on strong public policies and institutions that actively support research and development (R&D). According to Nelson, the success of an NSI is determined by the coherence and quality of interactions between actors, as well as by the government's role in providing a stable environment for innovation. Nelson's comparative framework highlights how policy coherence, particularly in education and R&D funding, is essential for fostering innovation across different national contexts, underscoring the significant role of public policy in structuring NSIs, showing that national innovation systems are far from homogeneous. Instead, they are diverse and highly context-dependent, evolving in response to local political, economic, and cultural circumstances. By examining NSIs comparatively, Nelson emphasizes that each system's institutional arrangements and policies must be tailored to its unique environment in order to optimize innovation performance (Nelson 1993).

Christopher Freeman adds a historical dimension to this analysis, tracing the development of NSIs over time, showing how innovation systems evolve in response to specific national circumstances and historical challenges. Freeman's historical approach highlights the essential role of public policy and institutional support in fostering innovation, noting that NSIs emerge not in isolation but in response to social, political, and economic pressures. He explores the example of Japan's rapid industrialization and technological advancement in the late 20th century, attributing much of its success to targeted industrial policies and coordinated efforts between government and industry. According to Freeman, Japan's NSI was characterized by close collaboration among businesses, academia, and government, creating an environment that encouraged ongoing learning and adaptation. This case study demonstrates that the evolution of NSIs depends heavily on historical, economic, and institutional factors unique to each nation, such as cultural attitudes towards cooperation and the state's willingness

to intervene strategically in the economy. He also argues that these unique national factors shape each country's approach to learning, innovation, and policy implementation. Historical events and the prevailing social and economic environment determine how institutions and policies are structured, ultimately influencing a nation's innovation capacity. Freeman's analysis thus provides a valuable framework for understanding how NSIs are "path-dependent", with historical trajectories shaping future innovation pathways (Freeman 1995).

While Lundvall, Nelson, and Freeman adopt different approaches to NSIs, their theories share fundamental points that contribute to a holistic understanding of national innovation systems and offer a framework for analysing how innovation is fostered and managed within different national contexts. Together they lay the foundations for understanding how institutional, economic, and cultural factors shape the development and success of NSIs. A shared fundamental point is the importance of institutional support and public policy in fostering innovation, as well as the unique influence of national context in shaping how innovation systems operate. The normative component of these theories is very important: by recognizing the unique characteristics and historical trajectories of each system, policymakers and scholars can better understand the conditions that promote innovation, thereby enhancing national competitiveness and economic growth.

The Shift to Innovation Ecosystems

As globalization, digitalization, and technology networks expanded, limitations in the NSI framework became more apparent. Innovation increasingly requires dynamic, cross-border collaboration, flexibility, and the ability to quickly adapt to technological and market changes, which the national-centric NSI model does not fully address. The concept of the innovation ecosystem, which emerged in the early 2000s, evolved to capture this more complex, network-based, and often global nature of innovation processes (Adner 2006). An innovation ecosystem comprises a network of diverse actors – such as firms, research institutions, investors, governments, and users – whose interactions create value collectively rather than individually. Granstrand and Holgersson identify seven main components: "An innovation ecosystem is the evolving set of actors, activities, and artifacts, and the institutions and relations, including complementary and substitute relations, that

are important for the innovative performance of an actor or a population of actors" (Granstrand and Holgersson 2020, p.3). In the research literature, the factors most frequently referenced are the actors and their collaborative relationships. Additionally, empirical descriptions of innovation ecosystems often emphasise conflictual relationships between actors and the interactions between these and the development of ecosystems. (Gawer 2014).

The ecosystem metaphor suggests an interconnected web where success relies not only on the contributions of each actor but on their alignment and ability to co-evolve. Unlike NSI, which is grounded in national boundaries and policies, innovation ecosystems are often boundaryless, flexible, and responsive to rapidly changing market conditions and global challenges. While NSI focuses on the national context, relying on government policies and institutions to foster innovation, innovation ecosystems are less restricted by geographic or political boundaries, often spanning regions, industries, or even the globe. This allows them to incorporate a wider range of actors, including multinational corporations and international research collaborations (Autio and Thomas 2014). While NSI frameworks often emphasize the role of centralized policy interventions and national priorities, innovation ecosystems are decentralized, driven by complex, interdependent relationships between public and private actors, often without a central governing authority. Ecosystem success depends on cooperative alignment rather than centralized control (Oh et al. 2016). While NSI promotes interaction within national boundaries, innovation ecosystems emphasize co-evolution, where actors adapt their strategies and capabilities based on mutual dependency and feedback loops. In this model, firms, institutions, and users work closely together to respond to technological advances and market shifts, creating an adaptable network that can evolve with changing needs (Adner 2017).

The shift from NSI to innovation ecosystems reflects broader changes in the economy, especially the rise of digital technologies and globalization. The NSI model is well-suited to analysing national economic development and the role of national policies. However, it falls short of addressing challenges like rapid technological change, the need for agile response to market dynamics, and cross-border cooperation that characterizes today's global innovation landscape. Innovation ecosystems are better suited to the realities of modern, open innovation where value is co-created among a network of actors. This shift has im-

plications for how firms strategize, how governments design policies, and how stakeholders collaborate. In an ecosystem, firms are no longer isolated innovators; they are collaborators, working within a network that extends beyond their borders (Oh et al. 2016). For example, Silicon Valley exemplifies the ecosystem model. It is characterized by its open and collaborative environment, where firms, universities, venture capitalists, and government agencies work together, largely independent of national boundaries. This ecosystem model has proven to be highly adaptable, capable of absorbing and reacting to rapid technological changes while fostering an environment conducive to start-ups and tech innovation (Kenney and Mowery 2014).

The shift to innovation ecosystems presents challenges for policymakers who traditionally relied on NSI-focused policies. Effective support for innovation ecosystems may require policies that facilitate cross-border cooperation, encourage private-public partnerships, and promote flexibility over rigid regulatory frameworks. Governments can play an essential role by acting as facilitators, creating frameworks that support ecosystem alignment and international collaboration rather than only national priorities. In an ecosystem, policies that encourage openness, such as data sharing, cross-border knowledge flows, and reduced barriers to collaboration, can help maintain the adaptability and growth of the ecosystem. However, balancing national interests with global integration remains a challenge for countries aiming to strengthen their role within innovation ecosystems (Autio and Thomas 2014).

The evolution from National Innovation Systems to Innovation Ecosystems reflects a shift from a nationally focused, institution-driven approach to a network-centric, collaborative framework that transcends traditional boundaries. This transition underscores the growing importance of cross-boundary interactions, adaptability, and co-evolution among a diverse range of actors. As innovation becomes increasingly global and interconnected, the ecosystem model provides a more comprehensive and adaptable framework for understanding and supporting – both as regards academic debates and policy-making – innovation processes in today's complex economy. In this context, there has also been growing interest in the study of cities as aggregated ecosystems of different ecosystems (Balestrin et al. 2020), particularly favourable environments for the creation and development of innovation ecosystems, where high levels of collaboration between innovation actors can devel-

op. Silicon Valley, London and Barcelona are often presented as successful examples in this regard (Pique et al. 2019; Engel 2015). Several cities and regions around the world are trying to replicate this model, also stimulated by reports and indices such as the Global Innovation Index (2018) or the Global Startup Ecosystems Report (2020).

The Triple Helix Model

The Triple Helix model of innovation, developed by Etzkowitz and Leydesdorff in the late 1990s, describes the interactions between universities, industry, and government as the key drivers of knowledge-based economies. Unlike traditional innovation models that focus on the role of industry alone, the Triple Helix model emphasizes a more dynamic, collaborative approach where each of the three spheres influences and co-evolves with the others, creating a system conducive to innovation (Etzkowitz and Leydesdorff 1995).

The Triple Helix model emerged in response to the limitations of traditional linear innovation models, which often placed industry at the center and viewed universities and government merely as supporting actors. Recognizing the increasing importance of knowledge and research in economic development, the new model proposed that universities, industry, and government must work closely together to foster innovation (Etzkowitz 2002). This model advocates a more integrated, non-linear approach, with universities playing a pivotal role as creators of knowledge, government as an enabler, and industry as the commercial driver. Each sphere within the Triple Helix model – university, industry, and government – has its primary function but also engages in activities typically associated with the others. Universities, for example, go beyond traditional education and research roles by actively participating in entrepreneurship and technology transfer. Similarly, industry and government become involved in knowledge creation and dissemination, taking on roles that were previously exclusive to academia. This overlapping of roles is a core principle of the Triple Helix, reflecting the model's flexibility and adaptability to contemporary innovation challenges (Etzkowitz and Zhou 2006).

The model promotes interaction between the three spheres, suggesting that innovation thrives when there is a collaborative, interdependent relationship among universities, industry, and government. This interdependence allows knowledge and resources to flow freely

between sectors, leading to more effective and responsive innovation systems (Ranga and Etzkowitz 2013). A distinctive feature of the Triple Helix is the hybridization of roles, where each sphere engages in activities beyond its traditional domain. For instance, universities not only educate and conduct research but also create start-ups, patent discoveries, and engage in technology transfer activities. Industry may establish research partnerships with universities, while governments provide funding and regulatory frameworks that encourage innovation. This overlapping of roles is essential for generating new knowledge and commercializing innovations (Etzkowitz 2002). The model places a strong emphasis on knowledge as a fundamental economic driver, particularly in the context of global knowledge economies. Universities become key actors in creating, disseminating, and applying knowledge in ways that stimulate economic growth and competitiveness. The Triple Helix thus reflects a shift from industrial economies to knowledge-based economies, where intellectual capital and innovation are primary sources of value (Leydesdorff 2012).

The Triple Helix model has been widely applied in different regional and national contexts with the aim to foster economic development and technological innovation. For example, in the United States, the Massachusetts Institute of Technology (MIT) serves as a model of the Triple Helix in action. MIT actively collaborates with private firms and government agencies to commercialize academic research, driving technological advancements in sectors such as biotechnology, information technology, and renewable energy (Etzkowitz 2002). In Sweden, the Swedish Triple Helix model emphasizes partnerships between universities, large corporations, and government agencies, particularly in sectors like telecommunications and engineering. The Swedish government actively supports innovation through funding initiatives, while large companies like Ericsson collaborate with universities to develop new technologies, leading to sustainable growth and industry competitiveness (Etzkowitz and Klofsten 2005). The model has also been adopted in emerging economies, where governments use Triple Helix principles to establish science and technology parks, incubators, and innovation clusters. In countries like China and Brazil, Triple Helix-inspired policies have helped to accelerate knowledge transfer and foster start-up ecosystems, demonstrating the model's adaptability across different economic contexts (Almeida 2005; Leydesdorff and Etzkowitz 2001).

The Triple Helix model has transformed innovation policy and strategy, prompting governments to rethink their roles in supporting academia and industry. By fostering environments that encourage collaboration, the model supports entrepreneurship and technology transfer, creating ecosystems that are resilient and adaptable to change. Universities, in particular, have become more entrepreneurial, establishing technology transfer offices, spin-off companies, and venture capital partnerships that generate economic impact (Ranga and Etzkowitz 2013). As innovation ecosystems evolve, the Triple Helix model continues to adapt. Emerging variations of the model incorporate additional actors, such as civil society, to address broader challenges like sustainability and social innovation. Known as the Quadruple Helix or Quintuple Helix models, these adaptations reflect an increasing recognition that innovation must address not only economic needs but also social and environmental issues (Carayannis and Campbell 2010). Nowadays, the model remains a central framework in guiding policy and fostering collaborative, knowledge-driven innovation.

1.3. The "Entrepreneurial State": the role of the state in technological innovation processes

The models described above all involve an important role for the public sector, and in particular the state. Mariana Mazzucato, an influential economist, has redefined conventional perspectives on the public sector's role in economic innovation and value creation. Her research challenges the notion that the private sector is the primary driver of technological advancement, suggesting instead that governments have historically played a proactive and often entrepreneurial role in fostering breakthrough innovation. In her work, Mazzucato outlines the characteristics of an entrepreneurial state, provides frameworks for market-creating policies, and argues for a revaluation of public sector contributions to economic growth and societal well-being.

In her very famous and cited "The Entrepreneurial State" (2013), Mazzucato critically examines the pervasive myth that innovation originates primarily from the private sector, while the public sector is merely a "fixer" of market failures. This assumption has led to a widespread undervaluation of the public sector's role in initiating high-risk investments that have often paved the way for private-sector success. Mazzucato argues that the idea of a self-regulating, efficient market

is flawed. Private companies frequently avoid high-risk investments, particularly in fields where potential profits are distant or uncertain. This risk aversion means that transformative innovations in fields like aerospace, pharmaceuticals, information technology, and renewable energy often arise from government-led initiatives and funding. In the case of the internet, GPS, and biotechnology, she points out that these advances were products of government programs, particularly in the United States, funded by agencies such as DARPA and NASA. By contrast, private-sector players typically enter once the technology has been "de-risked" through public investment. Mazzucato's analysis reframes the state's role from market "fixer" to "maker," asserting that governments are not only capable of compensating for private-sector shortcomings but are also active in defining new markets and technological frontiers. She encourages policymakers to adopt a more entrepreneurial approach, where governments pursue ambitious missions that not only stimulate growth but also create new sectors. For example, NASA's investment in space exploration spurred innovations that have reshaped industries, from telecommunications to materials science. By acknowledging the state's capacity as an innovator, Mazzucato argues, societies can rethink investment strategies that support sustained, mission-oriented innovation.

In the field of innovation policy, in particular, Mazzucato (2016) thus elaborates a new framework that positions the public sector as an essential driver of innovation. She argues that traditional "market-fixing" policies, which attempt to correct specific inefficiencies, are inadequate for achieving long-term economic goals. Instead, she calls for "market-creating" policies, where governments work proactively to shape markets that serve broader social needs and objectives. Again, she critiques the notion that governments should only intervene to fix market failures. Instead, she proposes that innovation policy should focus on creating new markets and ecosystems that allow for transformative, long-term growth. This market-creating role requires governments to take an entrepreneurial stance, assuming the risk of investment in areas that the private sector may deem too uncertain or unprofitable in the short term. A cornerstone of Mazzucato's market-creating approach is the concept of "mission-oriented" policy (2018b), where governments define and pursue ambitious goals that require coordinated efforts across public, private, and academic sectors. She describes this approach as essential for addressing complex,

long-term challenges like climate change or healthcare improvement. Mission-oriented policies not only provide financial support but also set regulations, develop infrastructure, and create incentives that align diverse stakeholders toward a common objective. This framework contrasts sharply with reactive policies that simply respond to failures, underscoring the potential of governments to lead in creating social and economic value.

In more recent times Mazzucato has expanded her critique of conventional economic perspectives by exploring the concept of "public value". Mainstream economics, indeed, often underestimates the public sector's contribution to value creation, viewing government activity primarily as a means of compensating for inefficiencies. Mazzucato (2018a) aims to redefine public value in order to encompass the proactive, market-shaping actions that governments take to drive innovation and societal benefits. She also critiques traditional metrics like GDP, which in her opinion fail to capture the broader impact of public investment on social well-being, environmental sustainability, and inclusive growth. She calls for a broader understanding of public value that includes government-led initiatives aimed at long-term societal challenges, even when immediate economic returns are uncertain. To fully recognize the public sector's role in value creation, Mazzucato advocates for the development of new metrics that measure public investments" broader social and economic impact. These metrics should go beyond traditional cost-benefit analyses and consider long-term benefits, such as improved health outcomes, environmental preservation, and technological progress (Mazzucato et al. 2022). Moreover, she argues that accountability mechanisms are essential to ensure that the public sector can lead effectively in shaping markets. Transparent evaluation criteria and equitable sharing of benefits are essential to prevent the privatization of publicly funded innovation, such as pharmaceutical breakthroughs that emerge from state-sponsored research.

Mariana Mazzucato's work has generated significant debate within economics and public policy, challenging the long-standing separation of roles between public and private sectors. Through her works, Mazzucato intends to demonstrate that the state has historically played an indispensable role in technological advancement and economic development, especially in fields requiring substantial risk-taking and long-term investment. Her concepts offer a compelling vision for governments and policymakers more in general.

2. The Cultural Political Economy approach and the hegemonic imaginary of Knowledge Based Economy

2.1. Critical Realism, Regulationist School, Strategic-Relational Approach

Critical realism is the philosophy of science that has informed the development of CPE. To quote Ngai-Ling Sum and Bob Jessop, the two scholars who contributed most to developing this theoretical approach:

> "Critical realism has an important "underlabouring" role in the natural and social sciences. In other words, it examines, critiques, refines and reflects on the ontological, epistemological, methodological and substantive presuppositions of different theoretical traditions, disciplines, schools and so forth. This "underlabouring" role also implies that critical realism in general cannot provide the substantive concepts and methods necessary to develop particular critical- realist theoretical approaches. These have to be produced through other means – but can then be subject to further critical-realist reflection as one among several ways to elaborate their substantive implications." (Jessop and Sum 2013, p. 9)

Adherents of critical realism generally posit the existence of real causal mechanisms, often hidden or latent, which may become active under specific conditions and contingencies but may also remain inactive due to various factors or influences. Based on this view, critical realists differentiate between real mechanisms, actual events, and empirical observations. The real includes the distinctive emergent features, causal properties, affordances (possibilities for action provided by a particular material object or social structure), and vulnerabilities within a network of relations—which might or might not be actualized. The empirical relates to evidence about the actual – that is, those

inherent potentials that have been realized. Together, the empirical and the actual prompt exploration into the nature of the real (Bhaskar 1972; Archer et al. 1998; and Sayer 2000).

This ontological realist position has implications for the social sciences, as will be shown in the research on innovation ecosystems. Critical realism argues that social forms exist before individuals and are essential for individuals" actions, but these social forms do not exist independently of how agents understand their own actions; in this way, they are both discursive and material. Social actions either sustain or alter social forms, and this excludes any rigid or reified view of society; otherwise, it can be understood as a complex and provisional set of tendencies and powers, that only continue to exist as long as some of them are actively upheld by human intentions and actions (Jessop 2005).

From an epistemological perspective, as we will explore in more detail in Chapter 3, this approach challenges the simplistic and naïve positivist method of inferring causation solely from empirical regularities, as if cause-and-effect relationships could be deduced without preliminary or subsequent theoretical analysis. Critical realism emphasizes the existence of a real world as a fundamental regulative idea, but its proponents do not claim direct access to it. Instead, they rely on a method called "retroduction" (Bhaskar 1972), that investigates what characteristics the world must have for an event to happen. This method is based on an open-ended process that switches between concept-building, retroductive analysis, empirical investigation, refinement of concepts, further retroduction, and so forth. Theory-building and testing are never finalized or complete; they are perpetually under construction, evolving through cycles of theoretical and empirical inquiry. For critical realists, scientific inquiry is a continuous, spiral process that moves from knowledge of observable (empirical) phenomena to understanding the underlying structures and causal mechanisms that produce them. In this view, "concepts are never introduced once and for all at a single level of abstraction but are continually redefined in the movement from abstract to concrete – acquiring new forms and transcending the limits of their previous formulations" (Aglietta 1979, p. 16).

CPE adopts a critical realist ontology and epistemology to inform its theoretical and analytical approach, that integrates concepts and principles from the regulation approach (Sum and Jessop 2006) with a particular interpretation of the relationship between structure and

agency. This makes it possible to apply the assumptions of critical realism to the level of concrete analysis. Regulationists approach the study of the economy in a broad, inclusive manner. They analyze what might be termed "l'economia integrale" – or "integral economy". In essence, regulation theorists focus on the historically specific and contingent sets of interconnected economic and non-economic mechanisms and practices that enable capital accumulation to proceed relatively stable over long periods, despite the inherent contradictions and tensions within capitalist relations (Aglietta 1979; Boyer 1990; Lipietz 1987). Although they recognize the inherently chaotic influence of exchange relations in shaping capitalist reproduction, regulationists place special emphasis on the supplementary role of various other mechanisms – such as institutions, norms, conventions, networks, procedures, and calculation methods – in organizing, enabling, and guiding – or "regulating" – capital accumulation. They argue that sustained capitalist growth over time depends not only on economic structures and practices but also on crucial extra-economic conditions. Thus, their analysis extends beyond a limited focus on production functions, economizing behaviour, or market forces alone, considering the broad array of institutional factors and social forces that play direct or indirect roles in the process of capital accumulation (Jessop 1997a).

The concept of "integral economy" is a clear reference to Gramsci's concept of the "stato integrale" – or "integral state", from which the CPE derives its vision of the state. CPE interprets the state apparatus "in its inclusive sense", recognizing it as comprising both political society (state institutions) and civil society organizations (including those of capitalists and labor). It considers the state's primary source of legitimacy to be its ability to maintain "relative autonomy". In its activities within wider society, the state promotion of liberal ideals of freedom and equality is inscribed as a form of ideology. This hegemonic stance allows the state to support the long-term interests of capital and sustain the process of capital accumulation. However, to achieve this, the state must serve the broader interests of capital, not the interests of any specific capitalist faction. Since the state's unique powers, resources, and obligations are rooted outside the formal boundaries of the state apparatus – existing within broader civil society – its authority remains inherently relational and conditional. In this context, the state's role in upholding capitalist social relations influences its institutional structure, separating it from the economic sphere of value production.

This structure grants the state a degree of "relative autonomy" from civil society and the economy, which in turn prevents it from being perceived as a "class state" (Sum and Jessop 2006).

In his pioneering analysis, Aglietta explored how regulation shapes new forms that are both economic and non-economic, organized within structures that collectively reproduce a foundational and determinant structure, the mode of production (Aglietta 1979). His initial focus was on what might be termed both the economic and social modes of economic regulation. The economic dimension involves the significant role of market forces and economic exchange in the self-organization of capitalism, while the social dimension addresse the role of extra-economic elements in organizing economic activities. Regulationists frequently highlight factors such as legal and social frameworks around wages and the wage relation, the interaction of financial and industrial capital, corporate structures, methods of economic calculation, the role of the state, education and training systems, and international regimes. Since Aglietta's initial work, many regulation theorists have increasingly emphasized the social aspects of economic regulation, often at the expense of purely economic factors. This shift implicitly aligns their approach more closely with a Gramscian view on the extended reproduction and regulation of capitalist relations (Jessop 1997a). This trend is further underscored by some prominent regulation theorists explicitly advocating for a stronger theoretical focus on the state through the incorporation of Gramscian or neo-Gramscian ideas (Aglietta 1979; Häusler and Hirsch 1987; Lipietz 1987; 1994).

The regulationist argument of greater interest is the idea that the objects of regulation are not fully established before being regulated, but are, in fact, partly shaped by the efforts to regulate them. More specifically, while certain elements of a potential object of regulation exist before attempts to regulate it, the articulation of a stable object of regulation depends on how these elements are combined through a trial-and-error process. This process leads to the creation of a specific, emergent, and contingent object (Sum and Jessop 2006). To fully understand the mechanisms through which this unlikely result is achieved, one must consider the semiotic aspects of strategic formulation and their connections to alternative and competing economic and political imaginaries. This requires a closer examination of the resources that critical semiotic analysis can offer for integrating into critical political economy (Jessop and Sum 2013).

The foundation in critical realism also has implications for how CPE conceptualizes the relationship between structure and agency, which is one of the longstanding and defining debates in sociological inquiry. Much of the work on structure and agency tends to focus on one of them while temporarily ignoring the other, often leading to a mechanical understanding of the relationship. It treats structure at any given moment in isolation from action, implying that a particular structure is equally restrictive and/or enabling for all actors and actions. Likewise, action is treated as separate from structure, where actors are viewed as making choices more or less freely and skilfully within the existing rules and resources. In contrast, CPE adopts a Strategic-Relational Approach (SRA) to move beyond this duality:

> One way to go beyond this duality is to examine structure in relation to action, action in relation to structure, rather than bracketing one of them. Structures are thereby treated analytically as strategic in their form, content and operation; and actions are thereby treated analytically as structured, more or less context- sensitive, and structuring. Applying this approach involves examining how a given structure may privilege some actors, some identities, some strategies, some spatial and temporal horizons, some actions over others; and the ways, if any, in which actors (individual and/or collective) take account of this differential privileging through "strategic- context" analysis when choosing a course of action. In other words it involves studying structures in terms of their structurally inscribed strategic selectivities and actions in terms of (differentially reflexive) structurally oriented strategic calculation (Jessop and Sum 2013, p. 49).

Structures are therefore conceived and analysed as strategically-selective in their form, content, and functioning, while actions are understood as both constrained by these structures and as capable of shaping them. To view structures as strategically-selective involves examining how certain structures may favour particular actors, identities, strategies, temporal and spatial perspectives, and actions over others. Similarly, to consider actions as structurally constrained requires investigating how actors (whether individual or collective) recognize and navigate these differential advantages through a strategic-context analysis when deciding on a course of action. This doesn't imply that actors are always making self-reflexive strategic decisions or providing continuous commentary on their true motives for action. However, it does acknowledge the possibility of such strategic reflection and

the role of social action in both reproducing and transforming social structures and their emergent characteristics. In essence, the SRA is concerned with the interplay between the strategic selectivities – a concept that will be discussed in more detail in chapter 3 – inscribed in structures and the differentially reflexive strategic calculations made by actors within those structures (Jessop 2001).

The SRA suggests that a potential outcome of the ongoing interaction between the strategic selectivities of structures and the reflexive behaviour of agents is the creation of a social configuration that appears structurally coherent and self-reproducing, although it may sometimes be marked by systematic contradictions or inconsistencies. This is where the SRA offers its most unique contribution to critical realist analyses of structure and agency (Jessop 2005). The emergence of relatively structured coherence from otherwise unstructured complexity can be understood through the continuous interaction between the reflexive reorganization of strategic selectivities and the repeated selection and retention of specific strategies and tactics aligned with those selectivities. "Structured coherence" refers to a strategically selective structure that favours actions which support the ongoing reproduction of that structure (Jessop 2008).

2.2. Imaginaries and urban accumulation strategies

Cultural Political Economy (CPE) is a trans-disciplinary approach that deals with the semiotic and structural aspects of social life and, above all, their articulation. To do so, "it combines the analysis of sense – and meaning making with the analysis of instituted economic and political relations and their social embedding. More expansively, it aims to produce a consistent "integral" analysis of political economy from the perspective of the interaction of its specific semiotic and structural features at the same time as it embeds this analysis into a more general account of semiosis and structuration in wider social formations" (Jessop and Sum 2013, p. 1).

This perspective is also applied to the study of the contemporary characteristics of power, hegemony, and the relationship between the economy and politics, assigning explanatory importance to both cultural – discourses and rhetoric, arguments, representations, more generally ideas – and material – concerning interests – aspects, and to both

agency and structure factors, which are related to each other within a strategic-relational conception (Jessop 2005; 2008).

A central role in the explanatory model of CPE is played by imaginaries. An imaginary is a semiotic set that frames the lived experience of individual subjects in an extraordinarily complex world and allows them to interpret it. Imaginaries are socially constructed, historically specific "systems of meaning" or "regimes of truth", linked to networks of social relations and institutional ensembles in which economic and material interests also count (Jessop and Sum 2013); rhetorics, often communicated in the form of a narrative, which have both cognitive and normative components and legitimise policies and models of action through the production of meaning (semiosis) (Jessop 2009). Economic imaginaries (Jessop 2013a) play a key role in identifying, privileging and seeking to stabilise certain economic activities. When an imaginary is operationalised and institutionalised, it leads to the homogenisation of policies and the establishment of specific relationships between political and economic actors.

In brief, CPE distinguishes between the "real existing economy" as the chaotic sum of all economic activities – broadly defined as concerned with the appropriation and social transformation of nature for the purpose of material provisioning – and the "economy" (or rather "economies" in the plural) as a more or less coherent, imaginatively narrated subset of these activities. Practices of calculation, management, governance or orientation are always oriented towards subsets of economic relations – economic systems or subsystems – that have been discursively, and perhaps also organisationally and institutionally, fixed as objects of intervention. This entails economic imaginaries that rely on semiosis to constitute these subsets (Jessop 2012).

CPE analysis focuses on the co-evolution of semiotic and extra-semiotic factors and processes in the processes of variation, selection and retention of discursive and material practices. Crises are a particularly significant moment in this regard, as they produce profound cognitive, strategic and practical disorientation, disrupting the settled worldview of political and social actors and opening a space for the proliferation (variation) of different interpretations of the causes and remedies of the crisis itself. Only some of these interpretations are selected (selection) and translated into economic strategies and policies; of these, only some prove effective and are actually retained (retention) and become the basis for private and public strategic and policy initiatives to

manage and/or overcome the crisis (Jessop 2009; 2015). In this way, the interpretations on which these policies are based are given a veneer that makes them self-evident, turning them into tools of hegemony for the ruling classes in contemporary capitalism. As a critical approach, CPE is interested in understanding how political and economic elites involved in the hegemonic project of neoliberalism manage to exclude alternative readings and maintain their strategies of accumulation despite resistance.

It is claimed, for an economic imaginary to be successful, it must plausibly translate into accumulation strategies. These define a specific "growth model" for a given economic space and its extra-economic preconditions (cultural, institutional and political), and outline a general strategy suitable for its implementation. The urban context thus also becomes the place where economic interests and political projects are articulated in different accumulation strategies. (Jessop 1997a). An urban system of political economy can be analysed by connecting accumulation strategies – that give an account for how "struggles over the economic and social modes of economic regulation play a key role in shaping and unifying different supranational, national, regional and local modes of growth" (Jessop 1997a, p. 61) – to the formation of local "hegemonic bloc"[1] and "historical bloc"[2].

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[1] It is by discussing class alliances and national-popular forces mobilized in support of a given hegemonic project that Gramsci introduces the concept of hegemonic bloc: *it refers to the historical unity, not of structures (as in the case of the historical bloc), but of social forces (which Gramsci analysed in terms of the ruling classes, supporting classes, mass movements, and intellectuals). A hegemonic bloc is a durable alliance of class forces organized by a class (or class fraction) which has proved itself capable of exercising political, intellectual, and moral leadership over the dominant classes and the popular masses alike. (…). Although this argument applies principally to the national state, it can also be used in studying supra- and sub-national regimes.* (Jessop 1997a, p. 57)

[2] Following Gramsci, "an historical bloc can be defined as an historically constituted and socially reproduced correspondence between the economic base and the politico-ideological superstructures of a social formation". Sheltered from the rigid interpretations internal to historical materialism on the structure-superstructure relationship, this concept can therefore be understood as "the complex, contradictory and discordant unity of an accumulation regime (or mode of growth) and its mode of economic regulation" (Jessop 1997a, p. 56). An accumulation regime consists of the dominant and relatively long-lasting configuration of the process of capitalist accumulation, even in the urban space, and is determined by the conflicting or cooperative relationships established by the actors of a specific context, albeit within limits established by the mode of production and distribution of resources. The concept of mode of regulation, on the other hand, refers to the political, institutional and cultural/ideological elements that contribute to the reproduction of the accumulation regime. Accumulation regime and mode of regulation combine to form

Following this interpretation, the stability or propensity to change of the development model of an urban space is determined by the relationships among actors of a given context. Alliances and conflicts between different class fractions[3] can in fact cause changes in the accumulation space, therefore it is important to focus on the relationship between local accumulation strategies and prevailing hegemonic projects. The latter help to ensure the relative unity of different social forces by mobilizing them in support of "a concrete program of action that asserts a contingent general interest in the pursuit of objectives that explicitly or implicitly advance the long-term interests of the hegemonic class (fraction)" (Jessop 1997a, p. 62). A hegemonic project, to become such, needs to produce political-economic imaginaries that hold together the interests and objectives of different fractions of capital in common accumulation strategies, also guaranteeing their extra-economic conditions (Jessop 2009).

On the basis of this vast theoretical apparatus, of which only some general coordinates have been outlined, CPE provides useful tools for incorporating the analysis of the dynamics of the cultural sphere into the study of power and the relationship between the economy and politics. On the one hand, they are considered important from an ontological point of view, since culture and semiosis are co-constitutive of social existence and must be a subject or phenomenon to be studied – discourses, identities, events, practices, processes, institutions, cultures and subcultures, everyday life – and therefore an object of research. On the other hand, they are important from a methodological point of view because cultural aspects of social relations provide a perspective, an entry point, to explain other aspects of the social world, including power. Semiosis is a universal and critical dimension of all social life and cannot be confined to an arbitrarily abstract or isolated sphere of culture. At the same time, not everything can be reduced to the semiotic dimension, since material and immaterial processes are co-constitutive of social and political relations (Jessop 2004).

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the development model of a given urban space, "within a dialectical relationship that can be interpreted as the co-constitution of the accumulation regime as an object of regulation in and through its co-evolution with a corresponding mode of regulation" (Jessop 1990, p. 310).

[3] The concept of class fraction is used to analyze the organization of conflicts and alliances and how these contribute to structuring the space of accumulation. In this case, following the theory of Clarke (1978), it can represent a theoretical tool useful for understanding the way in which the primary function that an actor performs in the accumulation process shapes the interests and objectives of the actor himself.

Being a grand-theoretical project – rooted in an anti-determinist Marxism – its insights can also be applied to the field of research and innovation, using science and technology policies as an entry point for the analysis (Tyfield 2012). Science, as a source of innovation, plays a fundamental role in the development of new technologies, creates new objects in which to invest for profit, and helps to characterise and "enclose" new spaces as "spatio-temporal fixes" that guarantee the opening of new avenues for capitalist accumulation. In a CPE perspective:

> "in a dynamically stable capitalist formation, mutually supportive dynamic relations subsist between science and technology, underpinning in complex cultural and material ways a hegemonic political regime, which in turn supports certain kinds of innovation (through an innovation regime favouring technologies that are seen as attractive). In other words, technology is understood as a "politico-technical" phenomenon, in which the political economy is co-constructed alongside the material technology and systems thereof." (Markusson et al. 2018, p. 6)

Addressing the issues of research and innovation through the conceptual tools of the CPE allows to include the insights of the cultural turn, and at the same time keep the regularization of capital accumulation (Sum and Jessop 2006; Jessop 2013b) using or based upon technosciences at the center of the analysis. This regularization of an accumulation regime implies a "social fix", that is a way of regulation, which feeds and supports the specific dynamics of the capital relationship in a given context through the articulation of its economic and extra-economic elements, thus ensuring that different forms, institutions and practices can mutually support and reinforce each other (Jessop 2002). Given the central importance of technoscience in contemporary capitalism and the leading role in fostering economic growth and overcoming crises assigned to science in the neoliberal project, "not just science and policy is being negotiated in a neoliberal techno-scientific program, but the many inherent tensions of neoliberalism itself" (Tyield 2012, p. 161).

2.3. The emergence of the Knowledge-Based Economy and its impact on Higher Education and Research

In the context of the crisis of the Fordist model of accumulation, the KBE has increasingly established itself as one of the hegemonic imaginaries of contemporary capitalism, alongside those related to competitiveness

and globalisation (Sum and Jessop 2013). Despite the turn of liberal market economies towards a finance-dominated accumulation regime – also through the assertion of constructions of the 2007-2008 financial crisis and the subsequent Great Recession that reflect their power and interests (Jessop 2015) – the KBE in its neoliberal variant[4] has become the dominant discourse and main reference of hegemonic visions and many accumulation strategies promoted by actors belonging to all scales of political power, from the supranational to the local and urban, helping to reinforce and stabilise the emergence of a post-Fordist regime of accumulation and its mode of regulation, and configuring itself as an all-encompassing mode of socialisation (Jessop 1991; 1997a).

The establishment of the post-Fordist labour process, regime of accumulation and mode of regulation certainly does not resolve the contradictions and conflicts of capitalism, but rather provokes the extension of its economic logic and, above all, of competitiveness (Jessop 1988; 1997b; Sum 2009) to include many factors previously identified as extra-economic. Among these, knowledge plays a dominant role within KBE – the concept of which is closely related to that of innovation-led competition, based on Schumpeterian entrepreneurship leading to creative destruction (Porter 1990) – and is used to identify and pursue opportunities for innovation that are likely to enhance competitive advantage (Jessop 2012).

From this point of view, the role of the nation-state – which does not disappear but is integrated into multi-level governance regimes, despite the fact that macroeconomic policies are no longer constructed and implemented only at the national level and the dominant imaginaries are oriented towards the interpenetration of different scales of economic organisation – remains central, from the local to the world market, in guaranteeing economic growth within its borders and in promoting the economic and extra-economic conditions capable of ensuring competitive advantages for capital, actors and economic spaces, including local and urban ones, located there (Jessop 2002). States are

[4] In The Coming of Post-Industrial Society: A Venture in Social Forecasting (1973), Daniel Bell claimed that a "sociologising" orientation concerned with intellectual planning and the public good would prevail in post-industrial societies, in which knowledge would replace capital as the main factor of production and universities would replace corporations as the dominant organisation. In later years, the dynamics of the global market have instead led to the affirmation of an "economising" logic, contrary to Bell's optimistic prediction: it was the hegemonic imaginary of the knowledge economy rather than the knowledge society that prevailed (Jessop 2012).

increasingly involved in the production and dissemination of knowledge, promoting its commodification through the transformation of collective property into intellectual property – through intellectual property rights, copyrights, licences – transforming intellectual labour into market-oriented wage labour, intervening to restructure research in universities to make it more responsive to the perceived needs of business (Jessop 2003).

The KBE has become a master narrative that shapes economic strategies at all levels, thanks also to the role played by powerful international organisations such as the World Bank, the European Union and the OECD. The latter, in particular, has played a leading role in promoting the KBE both as a fundamental locus of competition and as a hub for competitive strategies. Acting as a think-tank for its member states, through the production of official documents, metrics and statistics (e.g. OECD 1996a, 1996b, 1996c; 1997; 1999), it has turned the KBE into an "umbrella concept" that has allowed ideas and concepts about science and technology, as well as indicators and metrics, to be brought together within a single conceptual framework, thus enabling the production of documents and discourses whose primary audience is policy-makers (Godin 2006).

Indeed, one of the areas in which the pervasiveness of KBE discourses can be found is in science and technology policy. Godin (2004a; 2004b; 2006) describes the process by which the OECD has engaged the leading academics promoting the KBE concept – e.g. Foray and Lundvall (1996) – as consultants and produced official statistics to give it empirical content and legitimacy. A prominent role is played by the biannual, annual and biennial reports, which summarise "what is already available, what comes from daily work in other contexts and, above all, what is fashionable" (Godin 2006, p. 24), and subject policy-makers in member states to constant pressure to standardise policies.

From the perspective of a critical cultural political economy, the theoretical paradigm – in the case of KBE identifiable in "some combination of the reflexive application of knowledge to the production of knowledge, the key role of innovation, learning, and knowledge transfer in economic performance, and the increasing importance of the intellectual commons and/or intellectual property rights in contemporary competition" (Jessop 2012, p. 69) – and the associated policy paradigm – which, through its performative and constitutive character, contributes to the affirmation of its hegemony – tend to reinforce each other,

allowing the economic imaginary to be maintained through normalisation and institutionalisation, and translated into economic strategies and appropriate economic and extra-economic policies within the broader process of regularising and stabilising capitalist accumulation within specific spatio-temporal fixes (Jessop 2002; 2004).

The KBE emerged initially as a scientific or theoretical paradigm in the 1960s; it was gradually recontextualised as a policy paradigm in the 1980s and, more explicitly so, in the 1990s. Most recently, it has been integrated into knowledge brands oriented to competitiveness. Among these, the model developed by Porter on competitive advantages (Porter 1990; 2000) played a particularly relevant role, making the construction of clusters a major strand not only in the KBE literature on regional and local development but also in many other efforts to create, reinforce or upgrade competitiveness. This model circulated among academia, policy networks and consultancy circles and enabled policy transfer between different places and scales thanks to the intermingling of different disciplinary and governmental technologies sustained by the articulation of different elements of reports, indices numbers, clusters and chains. These concern all scale: for example the Global Competitiveness Report and the Global Competitiveness Index on a global scale, the Europe's INNOVA Cluster Mapping Project on a continental scale, or the OECD's International Conference on City Competitiveness on a local and urban scale. In summary, the direct action of agencies such as the OECD is added to the more or less underground work of imaginaries and knowledge brands in influencing strategies, visions and policies (Sum and Jessop 2013).

The field of education, and higher education in particular, has been and continues to be subject to radical transformations in this sense, as an extra-economic factor that has a direct and increasingly critical impact on economic development (at regional, national and supranational levels) and economic competitiveness (Dale and Robertson 2009; Godin 2006; Jessop 2012; Slaughter and Leslie 1997; Slaughter and Rhoades 2004; Jessop 2017b). Education is fully integrated "into a workfarist project oriented to full employability in an entrepreneurial society" (Sum and Jessop 2013, p. 33). Universities and, more generally, institutions responsible for higher education and research, whether public or private, tend to be increasingly dependent on and connected to industry and government within a "triple helix" model characterised by enormous normative power (Etzkowitz and Leydesdorff 1998; 2000).

The production, dissemination and transfer of knowledge become tools for increasing the competitiveness of the production system and the economies in which universities are located. The latter are urged to develop extensive links with industry, business, government and local communities, to act as competitive subjects and market players and as stakeholders in public-private partnerships, to reorient their activities towards external fundraising, patenting, technology transfer (Etzkowitz and Leydesdorff 1999; Geuna and Muscio 2009; Link et al. 2015), research parks, commercial spin-offs, science and technology parks, incubators, consultancy services, thus promoting an "academic capitalism" (Slaughter and Leslie 1997; Slaughter and Rhoades 2004; Slaughter and Cantwell 2012) that is a key feature of contemporary liberal economies. The "entrepreneurial universities" (Etzkowitz 2004; 2014; 2022; Radder 2010; Jessop 2017a), holders of intellectual capital and sellers of knowledge products, are the result of these processes and the protagonists of the new development model outlined and prescribed by the KBE.

All of this has important implications for the governance model of universities, which is being challenged "by demands for greater accountability to a multi-tiered state system, to all manner of business interests from small- and medium-sized firms to national and international champions, and, more generally, to the treadmill of competitiveness" and has been modified "in relation to internal management, accounting, audit, learning modes, incentives, career tracks and so on as well as in relation to external partnerships, knowledge transfer, political guidance and government controls" (Sum and Jessop 2013, p. 40).

State funding and evaluation mechanisms are also affected by these changes, leading to two "apparently contrary but mutually complementary strategies", the first of which reaffirms the function of the state with respect to education conceived as a "public good", while the second links education to the needs of the market and redefines it as a private good, thus reflecting

> "the hegemony of KBE imaginaries and strategies, its supporters" growing role in shaping education mission statements (to the detriment of concerns with citizenship, equity, social inclusion, social investment and nation building), the growing financial dependence of higher education on third-party revenues, including contract research, domestic and international tuition fees, consultancy, intellectual property revenue streams, fund-raising and endowment income and third mission activities" (Jessop 2017a, p. 856).

The economic and social imaginary of the KBE has guided and continues to guide the structural reforms and strategic reorientation of Higher Education and Research from a hegemonic position, contributing in a performative way to its transformation and adaptation to the changes of contemporary capitalism (Jessop 2017a; 2017b). The role of higher education and research in the transition to knowledge-based economies was already evident in the founding document published by the OECD in 1996 under the title "The Knowledge-based Economy": public research laboratories and related higher education institutions are "at the core of the science system" of member countries, contributing to knowledge production processes – "developing and providing new knowledge", and knowledge transfer – "disseminating knowledge and providing inputs to problem solving". Collaborations between universities and industry, in particular, "provide a means both for the efficient transfer of economically useful knowledge and for advanced training in skills required by industry" (OECD 1996c).

These developments have taken place at all scales, from cities to regional and national economic areas, to quasi-continental and supranational areas. For the European Union (EU), the Lisbon Agenda was the first significant step in this direction. By reaffirming the strategic goal of making Europe "the most competitive and dynamic knowledge-based economy in the world", the Agenda aims to prepare the transition "to a knowledge-based economy and society by better policies for the information society and R&D, as well as by stepping up the process of structural reform for competitiveness and innovation and by completing the internal market" (European Council 2000). Higher education is a central aspect of the document, "which calls for economic competitiveness through the interaction between the state, industry and universities in networks of innovation driven by application and production of knowledge", and among its goals "include expanding public and private funds for research and development, industry-university partnerships, establishing EU-wide networks of lifelong learning, and boosting tertiary participation, especially in science and technology fields" (Slaughter and Cantwell 2012, p. 592).

From a competitiveness perspective, "it is vital that knowledge flows from universities into business and society", through various mechanisms such as "the licensing of university intellectual property, and spin-off and startup companies"; cooperation between universities and industry must therefore be intensified at both a national and

regional level, and oriented more "towards innovation, the startup of new companies and, more generally, the transfer and dissemination of knowledge" (European Commission 2003). The Commission also aimed to support the implementation of the declaration of the European Ministers of Education adopted in Bologna in 1999 – the main document of what is known as the Bologna Process – which had the aim of creating a competitive European higher education through structural reforms (Fairclough and Wodak 2008).

In order to enable universities and higher education institutions in general to make a full contribution to the achievement of the objectives set out in the Lisbon Agenda, the Commission also urged national decision-makers to address the serious funding shortfall in higher education through a "mix of public and private, and of basic, competitive and output-related funding", attracting "a much higher share of funding from industry" through partnerships in which "both sides find an interest". To this end, Member States were invited to guarantee fiscal rules that "enable and encourage partnerships between business and universities", also thanks to the work of the Commission in supporting the exchange of "best practices, surveys and studies, mutual learning between policy makers" (European Commission 2005).

In 2006, the EC made the case that "many European universities still underestimate the potential benefits of sharing knowledge with the economy and society, while industry has not developed sufficient absorption capacity to harness the potential of university-based research". In response, a plan was proposed for the "modernisation" of European universities – to make them more responsive to market demands and to develop partnerships that allow greater exploitation of scientific and technological knowledge – which raises the issue of funding and its radical transformation towards greater competitiveness:

> "Universities should be funded more for what they do than for what they are, by focusing funding on relevant outputs rather than on inputs, and by adapting funding to the diversity of institutional profiles. Universities should take greater responsibility for their own long-term financial sustainability, particularly for research: this implies pro-active diversification of their research funding portfolios through collaboration with enterprises, foundations and other private sources. Competitive funding should be based on institutional evaluation systems and on diversified performance indicators with clearly defined targets and

> indicators supported by international benchmarking for both inputs and economic and societal outputs." (European Commission 2006)

The Commission's work on transforming universities and research to meet the needs of the market and business, and to increase the competitiveness of higher education institutions themselves, continues today through communications such as "Achieving the European Education Area by 2025" (European Commission 2020a) and "A new European Research Area for Research and Innovation" (European Commission 2020b).

A strategy for universities has also been defined for 2022, calling on them to further strengthen their collaboration with industry, "supporting skills development for industry and the business sector, in addition to personal development purposes", reinforcing "universities" role in local innovation ecosystems, such as strengthening and sharing of technology transfer capacities, through spin-offs and through promoting joint investment". To this end, the Commission undertakes "to mobilize all the instruments at its disposal – be it governance, funding, cooperation, or legislation – to implement this strategy"; among these, it established the European Higher Education Sector Observatory, which combines "the best of the current EU data tools and capacities in one single place, while further enhancing their use and relevance for policy makers, universities, students and researchers" and enables in this way for governments "to strengthen their evidence basis on key topics such as inclusion, learning outcomes, progress on digital, green and entrepreneurial skills, technology transfer, employability, students and labor market needs, strengthening research careers, open science, the institutions" role in innovation ecosystems, and transnational cooperation in the higher education sector" (European Commission 2022a).

The new European Innovation Agenda also highlights how the alignment of research and technology infrastructures with regional business needs and opportunities has led to the strengthening of regional innovation ecosystems and industrial clusters "based on the co-location of research infrastructures, higher education institutions, research and technology organisations and industry", reaffirming the importance of collaboration between research institutions and industry to strengthen the competitiveness of the production system (European Commission 2022b).

Finally, through its Framework Programmes, the Commission has supported the efforts of universities and governments to promote knowledge transfer and the development of technology transfer organisations, funded cross-sectoral research networks and promoted a regulatory agenda through the publication in 2008 of the Commission Recommendation on the Management of Intellectual Property in Knowledge Transfer Activities and Code of Practice for Universities and other Public Research Organisations (European Commission 2008) – which "set policy guidelines for how universities should handle intellectual property, technology transfer, and collaborative research including recommendations to establish "professional" technology transfer services and set intellectual property and patent policies" (Slaughter and Cantwell 2012, p. 592), and more recently of the Commission Recommendation on a Code of Practice on the management of intellectual assets for knowledge valorisation in the European Research Area (European Commission 2023).

The latest Framework Program launched by the Commission is Horizon Europe, aimed at strengthening "close cross-border collaboration between multiple actors, including academia, the public sector, industry and individual entrepreneurs", whose third pillar in particular focuses "on supporting the development of disruptive and market-creating innovations and on enhancing European innovation ecosystems" (European Commission 2021).

3. Towards the definition of a research agenda and a framework for analysis

3.1. The heuristic agenda of Cultural Political Economy

As seen in the previous chapter, CPE is a transdisciplinary approach, oriented towards post-disciplinary horizons, which deals with the semiotic and structural dimensions of social reality and the different ways in which they are articulated and take shape in social relations. By integrating principles and concepts from both critical semiotic analysis and critical political economy, CPE aims at producing "a consistent "integral" analysis of political economy from the perspective of the interaction of its specific semiotic and structural features at the same time as it embeds this analysis into a more general account of semiosis and structuration in wider social formations" (Jessop and Sum 2013, p. 1). For this reason, the ontological assumptions on which it is based can be applied far beyond the realm of political economy, and the same can be said of the reflections on epistemology.

Inspired mainly by Marx's critique of political economy and Foucault's analyses of truth regimes[1], CPE assumes that knowledge is always partial and provisional and cannot fully grasp the complexity of the world and social reality. Therefore, the aim is not to produce a universal, trans-historical account of the "economy", or to theorise or model reality as such. Rather, it is to explore how complexity is

[1] Foucault focused on "how regimes of truth are produced through socially construed "problematization" at the level of discourse and corresponding social practices through what one might call knowledging technologies. These produce object fields, subject positions and forms of power/knowledge that contribute towards the assembling of dispositives. They emerge in response to "*urgences*", that is, emergencies, challenges, ruptures that destabilize past solutions, disorient received understandings, and pose social problems" (Jessop and Sum 2013, p. 208).

reduced through processes of sense and meaning-making (semiosis), and through constraints and limits on the possible combinations of social relations within specific temporal and spatial boundaries (structuration), thus producing knowledge – albeit contextual and partial – about historically specific economic orders[2].

These macro-theoretical and epistemological assumptions can offer useful tools not only for theoretical reflection and inquiry, but also for developing a middle-range research agenda, which in turn helps to better define the semiotic and structural dimensions of social phenomena and, above all, to investigate their relationship. CPE develops this meso-level agenda, also referred to as the "discursive-material approach" (Jessop 2004; Sum 2009), in order to investigate how discursive and material moments are articulated and impact on specific sets of social practices, and in particular in the processes of production of hegemony and hegemonic strategies.

A key role is played by economic imaginaries created and recontextualised at different scales by networks of actors with unequal access to power and resources: "Interactively constructing, contesting, and negotiating alternative imaginaries, these actors simplify a complex reality by selectively defining the "economy" as an object of calculation, management and governance" (Sum 2009, p. 185). The field of technological innovation, central to the remaking of neoliberal capitalism, is a relevant arena for such discursive-material conflicts. To observe it as a complex object of economic governance, an analysis based on the theoretical principles of CPE facilitates a deeper examination of the discursive features of capitalist social relations and how they are intertwined with structural features in the production of hegemony.

The heuristic framework proposed by CPE, drawing on the SRA, is based on four modes of evolutionary selection. Initially developed to address the dialectics between structure and agency, each with its own selectivity, the SRA is easily extended from structural selectivity to technological and discursive selectivity. The articulation of these four modes of strategic selectivity shapes both the semiotic and material moments of the dynamic of social relations. They interact across different conjunctures and settings as constraining forces, to condition the

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[2] These epistemological issues are the subject of a detailed discussion in Sum and Jessop 2006, in particular the logical-historical method entails the movement from abstract-simple analytical categories to increasingly complex–concrete ones.

variation, selection and retention of hegemonic projects and imaginaries. The description of the four selectivity modes is taken from Jessop and Sum (2013, pp. 217-218).

Structural selectivity refers to the uneven arrangement of limitations and possibilities that shape the actions of social forces as they aim for specific goals and projects. This arrangement only exists as it is continually reproduced through social practices and can evolve over time, either through gradual changes or intentional efforts to alter the established patterns of limitations and possibilities. Structures tend to prioritize certain interests, identities, agents, time-space contexts, strategies, and tactics over others. Furthermore, these selectivities are always relative and interconnected: structures are not universal constraints that apply equally to all actors but are inherently asymmetrical, as they are grounded in the ongoing contestation of fundamental social forms (such as capital relation, nature-society dynamics, racism, patriarchy) and their particular expressions in institutional frameworks, organizational types, and contexts of interaction.

Discursive selectivity is also characterized by asymmetry and, like structural selectivity, encompasses multiple dimensions. The key focus here is on the uneven constraints and opportunities that are embedded within specific genres, styles, and discourses (or more broadly, within particular forms of discourse or wider semantic frameworks). This includes considerations of what can be expressed, who is permitted to express it, and how these expressions interact within intertextual, interdiscursive, and contextual realms. The available semiotic resources impose boundaries on what can be imagined. Essentially, discursive selectivity relates to how various discourses (whether in everyday life or specialized contexts) facilitate certain expressions over others within the constraints of specific languages and the associated forms of discourse. Furthermore, discursive selectivity is not merely a matter of discourse alone—claiming so would lead to linguistic reductionism. It emerges from the varying interplay and co-evolution of discursive and non-discursive elements of social processes and practices, along with their combined effects in particular contexts and situations.

Technological selectivity refers to technologies as combinations of knowledge, disciplinary and governmental logics, and their ability to modify nature or regulate social interactions. This idea largely stems from Foucault's analysis. The CPE approach explores how discourses and discursive practices shape individual subjectivities and contribute

to maintaining power structures and hegemony. More broadly, technological selectivity encompasses the entire spectrum of production forces and the technical and social relations that define the division of labor in society. Technologies are understood as collections of knowledge, methods of control, and specific tools or systems that facilitate planned interventions, impacting both nature and social dynamics. Beyond their capacity to transform nature, technologies also influence social relations by (1) organizing labor and knowledge into distinct levels, (2) producing tangible outcomes like physical infrastructures or biopolitical control, and (3) shaping systems of knowledge or truth regimes. Ultimately, technologies determine choices, enable or limit actions, distribute benefits and burdens, and create legitimacy through their perceived efficiency and rationality.

Agential selectivity refers to the varying ability of individuals or groups to engage in strategic decision-making within the constraints of structural and discursive selectivities. Its application depends on specific circumstances and conjunctures, and it highlights how agents differ in their ability to navigate these structural or discursive frameworks, not just in general, but in relation to particular situations. A further distinction can be made between different social forces, including their formation as subjects with unique identities, interests (both ideal and material), and their varying abilities to plan strategically and take action. Agents influence outcomes through their capacity to persuade, interpret situations, challenge opponents, and adjust discourses and ideologies in a timely way. However, their actions are always shaped by underlying discursive and technological constraints.

The space-time interactions among these selectivities suggest there are multiple ways they function beyond just four modes. Possible combinations of these selectivities help mapping case studies by prioritizing a particular perspective when approaching the case. Different research questions or specific phenomena will demand attention to varied combinations, aligning with the CPE approach's emphasis on diverse entry points, perspectives, and spiral processes that deploy more and more of the full range of CPE's conceptual and analytical tools. Discursive selectivity, in particular, calls for engaging varied modes of critical semiotic analysis to better examine the articulation and co-evolution of discursive and non-discursive aspects of social processes and practices, as well as their combined effects in particular contexts and moments. While a cultural turn offers an escape from the

limitations of structuralist analysis, it should also maintain focus on the material aspects of social relations and thus acknowledge the constraints posed by processes occurring beyond the immediate awareness of involved agents.

Imaginaries, along with their related objects and subjects, are indeed "socially constructed, historically specific, and more or less socially (dis) embedded in broader networks of social relations and institutional ensembles" (Jessop and Sum 2013, p. 204). Semiosis plays a crucial role here, setting boundaries on what social agents can imagine, and offering CPE a methodological entry-point for analysing imaginaries (Jessop 2004). Critical linguistic and discourse analysts have developed several approaches to investigate the limitations and possibilities, rules, and resources within specific types of discourse, as well as their potential articulation in particular contexts and situations. Among these, Critical Discourse Analysis (CDA) is particularly significant for CPE. Scholars in this relatively emerging field have refined their analytical tools with a focus on critique rather than merely technical or instrumental analysis.

CDA emerged as a distinct approach through a collaboration established in the early 1990s among scholars like Norman Fairclough, Teun van Dijk, Leo van Leeuwen, and Ruth Wodak. CDA sought to move beyond linguistic analysis that concentrated on micro-textual units, textual and intertextual elements by incorporating social context in its analysis. Critical discourse analysts thus examine texts in both their semiotic dimensions and broader social contexts. Employing diverse methods, CDA intends not only to describe but also to explain and critique, particularly by highlighting how language is connected to ideology and power. Language, ideology, and power are indeed at the heart of this approach (Fairclough 1989; 2010; van Dijk 1998; van Leeuwen 2008; Wodak 1989). CDA scholars employ a wide range of methods, including "grammatical (phonological, morphological, syntactic), semantic, pragmatic, interactional, rhetorical, stylistic, narrative or genre analyses, among others, on the one hand, and . . . experiments, ethnography, interviewing, life stories, focus groups, participant observation, and so on, on the other" (van Dijk 2013).

CDA serves as a methodological complement to critical political economy, uncovering the specific mechanisms by which semiotically mediated practices and social relations are reproduced (Jessop and Sum 2013). It is inherently a multi- or trans-disciplinary endeavor focused on the relationship between discursive and non-discursive changes (Reisigl

and Wodak 2009). In essence, discourse analysts aim for "the productive integration of textual analysis into multi-disciplinary research on change" (Fairclough 2005, p. 76). Fairclough's approach particularly highlights the interconnection of language, social practices, and broader political and social structures. Social practices are influenced both by societal structures and by social events that shape everyday life (Fairclough 1989; 2001; 2010). A central concept in this framework is the order of discourse, derived from Foucault, which refers to "a social order looked at from a specifically discoursal perspective – in terms of those types of practice into which a social space is structured, which happen to be discourse types" (Fairclough 1989, p. 29).

This approach is grounded in realism, asserting that a real world, exists independently of our knowledge or understanding of it, including the social realm. Specifically, it follows a critical realist perspective, which states among other things that natural and social worlds are distinct, the latter relying on human actions for its existence and being thus socially constructed. While discourse's socially constructive impact is a central concern, a distinction is made between construal and construction. The world is construed, or represented, in diverse ways through discourse, but which representations gain socially constructive capacity depends on various conditions – such as power dynamics and inherent properties of the elements or aspects of the world being construed (Fairclough 2010).

While Fairclough underscores the importance of language in shaping social order, he avoids overestimating the role of discourse (Jessop and Sum 2013, p. 127) by acknowledging that "whereas all linguistic phenomena are social, not all social phenomena are linguistic – though even those that are not just linguistic (economic production, for instance) typically have a substantial, and often underestimated, language element" (Fairclough 1989, p. 23). Therefore, Fairclough moves from integrating text-analytical methods to a deeper engagement with social theories on contemporary economic, political, and social transformations (e.g., Chouliaraki and Fairclough 1999; Fairclough 2000; Fairclough 2006), bridging the gap between grand theoretical frameworks and grounded analytical methods, and consistently connecting analysis to the evolving nature of capitalism (Jessop and Sum 2013).

In conclusion, a particularly significant aspect for developing the research agenda of CPE is the proposal to shift the focus of CDA-inspired research from the critique of structures to the critique of strat-

egies, or attempts made by coalitions of actors to transform them. Strategies have a distinctly discursive character, as "they include imaginaries for change and for new practices and systems, and they include discourses, narratives and arguments which interpret, explain and justify the area of social life they are focused upon – its past, its present, and its possible future"; thus, CDA can play an important role in critical research centred on strategies, addressing a range of questions such as: "what strategies are emerging, what are their origins, and what groups of social agents are promoting them? A second is: which strategies are emerging as "winners" from strategic struggles; which strategies are coming to be "selected" at the expense of others, becoming dominant, or hegemonic? A third is: which strategies get to be implemented and actually shape social transformations and, potentially, changes in structures and systems?" (Fairclough 2010, p. 18).

3.2. Expanding the CPE heuristic agenda

The CPE framework emphasizes the significance of meaning systems, imaginaries, while maintaining a focus on the historical specifics of capitalist accumulation and institutional regularisation of its contradictions. It aims to offer a suitable theoretical basis for analysing how individual and collective actions and beliefs contribute to broader patterns of praxis, shared discourses and imaginaries, institutional arrangements, and larger social structures, thus impacting continuity or transformation within different political and social fields, including policy-making on research and innovation. It allows researchers to explore how everyday actions not only sustain but may also challenge social structures, while also try to explain how these structures enable, limit, or shape individual agency.

The application of this young theoretical framework to concrete analysis calls for a methodological discussion. As argued by scholars from different areas of the social sciences, "CPE has until now predominantly used critical discourse analysis (CDA) as a method to study the evolution of economic imaginaries. This method can be productively employed if the research interest is primarily located on the semiotic level" (Belfrage and Hauf 2015, p. 325). As we have seen, the imaginary refers non only to semiosis but also to its material supports – objects and subjects which are "socially constructed, historically specific, and more or less socially (dis)embedded in broader networks of social

relations and institutional ensembles" (Jessop and Sum 2013, p. 204) – and this requires "a broader toolkit" (Jessop and Sum 2012, p. 86). Although there has been a shift toward more specific analyses of the current global financial and economic crisis (Jessop 2009; 2013a; Sum 2009; 2010), its application in empirical studies has been deemed as limited (Van Heur 2010a; 2010b), as does its methodological advancement. Thompson and Harley (2012) have highlighted issues with the founders" advocated method of CDA, arguing that it tends to focus on discourse analysis in a way that favours a decontextualized study of discourses, rather than discourse analysis that keeps context central to the research process. In their view, CPE's critical realist underpinnings are not consistently applied. Indeed:

> "CPE requires a methodology that is capable of integrating the macro in the study of the micro, the abstract in the typically ethnographic immersion into the concrete and complex, the structural in the engagement with agency, while acknowledging the normativity inherent in such research. At the core of this methodology, the critical realist notion of retroduction has to be placed enabling the move from the abstract level of capital accumulation and social regularisation to more concrete levels of particular social strategies and everyday lived discourses and practices and back." (Belfrage and Hauf 2015, p. 326).

CPE endeavours to bring analysis to the concrete and complex level of the everyday, studying the concrete as it makes "the analysis of hegemony and ethico-political relations" the endpoint of its methodological move (Sum and Jessop 2006, p. 352). The semiotic dimension here is central, as it is the key concept of imaginary, through which the complexity of all substantive economic activities is reduced, identified, stabilised and managed as an "imagined economy" and transformed into "objects of observation, calculation and governance" (Jessop 2004, p. 163). These imagined economies are generally constructed through discourses and materially reproduced across various scales, spatial and temporal horizons, and contexts, including firms, other organizational forms, institutions and policy paradigms. In this asymmetrical process specific agents use specific strategies to manipulate discourse and knowledge in order to achieve this outcome.

CPE identifies three moments in the evolution of economic imaginaries, highlighting "the dialectic of path-dependency and path-shaping that emerges from the contingent co-evolution of semiotic and

extra-semiotic processes" (Jessop 2009, p. 340): variation, or proliferation, of competing imaginaries; selection of a particular discourse; and, retention of some relevant characteristics. Retention regards inclusion in an actor's habitus and identity, enactment in organisational routines, integration into institutional rules, but also the process by which certain hegemonic discourses come to influence the paradigms of policy-making. However, it is argued that for an economic imaginary to succeed, it must convincingly be translated into accumulation strategies and/or hegemonic projects, which then need to resonate with the core economic structures to ensure durability. This integration of context with discourse and practice is likely crucial also in analysis of capitalist policy making. To effectively translate this complex framework into practical research, a methodology that can fulfil its promises is necessary.

Even if the analytical ambitions of CPE are in line with its expressed ontology, it has been argued that its methodology currently hampers the realisation of its full potential (Belfrage and Hauf 2015; 2016; Jones 2008). In particular, CPE's alignment with CDA has been critically analysed, because the latter primarily emphasizes the discursive or semiotic aspects in the analysis of social phenomena, addressing the non-discursive, structural context only to the extent that it is needed to fully comprehend the discursive elements. As a result, it often fails to examine the intricate relationship between semiosis and structuration without favouring semiotic factors over structural ones from the outset (Jones 2004; Thompson and Harley 2012).

But CPE is not interested in merely linguistic forms of discourse analysis, because the problem it addresses – the improbable reproduction of capitalist relations through semiotic and structural mechanisms – is not a linguistic one. The discursive comes into consideration because it is necessary to understand and explain non-discursive processes and practices, not vice versa (Belfrage and Hauf 2015), and the methodological challenge is to demonstrate the importance of discourse as a potential causal mechanism without a priori privileging discourse as the dominant phenomenon or explanation" (Thompson and Harley 2012). A proposal for overcoming some of the tensions in the use of CDA is its combination with ethnographic methods, such as interviews, observations or focus groups, introducing Critical Grounded Theory (CGT) to reach CPE's full analytical potential and grounding it in ethnographically derived accounts of the everyday (Belfrage and

Hauf 2015; 2016). The classical version of grounded theory is founded on a positivist epistemology, secondo la quale the adequate "theory" is already there in the data, simply waiting to be "discovered" (Glaser and Strauss 1967). Jessop and Sum (2013, p. 123) reject it because "it is a theoretically agnostic, empiricist research method that…claims to avoid preconceived hypotheses that are imposed on the data and aims instead to ground its theory in a naïve observation of "raw" data gathered without prior theoretical contamination".

Subsequent generations have opened grounded theory to constructivism and notions of meaning-making (Charmaz 2006) with the consequent and definitive rejection of positivism and naïve realism and the reinforcement of the idea that categories and properties have to be related not only to the emerging conceptualisation but critically to previously existing theories as well (Clarke 2008; 2011). Several attempts have been made at integrating critical theory into the grounded theory method, recognising charges against the radical constructivist version of grounded theory for being insensitive to social structure and neglecting the complex interdependencies between structure and agency (MacDonald 2001). Others have taken a further step forward, introducing critical realist foundations (Kushner and Morrow 2003; Oliver 2012). The critical version presented here is founded, just like CPE, on critical realism too, and adopts the methodological principle of retroduction, thus occupying a third meta-theoretical position between positivism and radical constructivism.

Critical realism asserts that while a material reality exists independently of our understanding of it, all human knowledge of this reality is shaped by discourse and historical context. Science's task, then, is to approximate this reality through an ongoing and unending process, as complete knowledge of material reality is inherently unattainable. However, approaching reality is achievable because some discursive constructions are more effective and powerful in explaining material world events. Critical realism holds to a critical epistemology, and rejects the idea that reality can be accessed without interpretation, in a pre-discursive or non-conceptual way. As Sum and Jessop (2006) note, knowledge of the real world is always influenced by theory, so "facts" cannot simply be taken to form more abstract theories; rather, moving between concrete observations and abstract thought is essential for theory development. Our perception of empirical reality is inherently theory-laden, and this makes ethnography intrinsically

theoretically informed. The reality critical realism explores is complex, multi-layered, and shaped by multiple "generative mechanisms", including dynamics of domination and exploitation. Exploring the dialectical relations between the economic laws that generate observable phenomena and the everyday experience, including processes of meaning-making, requires the knowledge production process of retroduction, which combine ethnography and discourse analysis with substantial theoretical work (Belfrage and Hauf 2016).

In order to uncover generative mechanisms, a critical realist approach employs the methodological principle of retroduction, asking what conditions must exist for an event to occur. Starting from an observable phenomenon, it is possible to move backward to explore possible explanations. Responses to such questions give birth to retroductive arguments, which involve reasoning "from a description of some phenomenon to a description of something that generates it or conditions it" (Bhaskar 2009, p. 7). To develop these explanations, a critical realist approach draws on "analogies with already known phenomena" (Bhaskar 2009, p. 46) and pre-existing theories as cognitive resources for retroductive reasoning. These existing theories may be considered "proto-theories", or proto-scientific ideas based on everyday experiences – as well as scientific theories about the phenomenon under examination, which may be further explored, questioned, challenged, or reconstructed: "It is clear that we need some account of theory construction in the social sciences, since otherwise we are confronted by a mere mass of data. But we have in fact always got "proto-scientific" or ideological theories about society, since such theories are an essential part of social practice. (…) The question is therefore how to *transform* proto-theories into scientific theories which can explain and possibly contradict their own theoretical raw material" (Collier 1994, p. 165). In CGT:

> "These pre-existing theories and concepts are worked through during an initial phase of deskwork. The researcher analyses the relevant scientific literature as well as media and policy documents before employing them in the construction of "soft hypotheses". These will gently guide the researcher through the subsequent phase of ethnographic fieldwork. In this phase, ethnographic interviews, focus groups, participant observations or other ethnographic methods can be employed to produce rich qualitative data to be evaluated using the tools and techniques of grounded theory. Finally, the researcher revises, recon-

> structs or develops the initial proto-theories in the light of empirical findings. CGT is thus different from CDA, because the core of CGT is not textual analysis of fragments of discourses, from which other elements of the social are related to better understand the discourse. Rather, fundamental is the ethnographic immersion into the field, in which the researcher employs pre-concepts to better understand how discourses and imaginaries become practically relevant." (Belfrage and Hauf 2015, p. 334)

Following the methodological principle of retroduction, a continuous and spiral movement between abstract and concrete, between conceptual, theoretical and empirical work, is necessary in the development of theory, which comprises two moments, a deductive one – in which "existing theories and concepts are worked through and applied to the research object to generate initial conceptualizations that sensitize the researcher's understanding of observations and guide dialogue with participants" – and an inductive moment, "in which the researcher immerses herself in the field before working up empirical data through deskwork into emerging conceptualizations, refining previous concepts, deepening understanding, altering explanations and reconstructing existing theory" (Belfrage and Hauf 2016, p. 10).

In developing CGT, new conceptualizations and interpretations are constantly compared with established ones, refining and adding complexity to the initial ideas. Complete theoretical saturation is unachievable, so critical grounded theories remain provisional, incomplete, and open to future revisions. However, once these critically grounded concepts are formed within the retroductive cycle, they can be applied to explain social issues and problems at a particular time. The outcome is not an objective theory, albeit grounded, discovered in the data but rather a CGT shaped through a rigorous and proactive research process. Ultimately, this approach may challenge the explanatory power of existing mid-level concepts and broader theories (Belfrage and Hauf 2015; 2016).

CGT's incorporation of "pre-conception", as we have seen a concept avoided in first-generation and positivist grounded theory, facilitates the retroductive process, giving research a structure without being overly rigid. This approach allows for an informed, tentative, and relatively open-ended movement from the abstract and simple to the concrete and complex – even if "this process of discovery and method of presentation cannot culminate in the exhaustive reproduction of the real world (or, as Marx put it, the "real-concrete') in all its complexity (for Marx, as a

"concrete- in- thought')" (Jessop and Sum 2013, p. 7) – while empirical data analysis based on CGT helps to build conceptual frameworks that deepen our understanding of social phenomena on higher abstraction levels. Operationalised through CGT, CPE can bridge macro and micro perspectives in critical research across various fields, including policy-making, with particular relevance to research and innovation policies. In this movement, CGT combines the horizontal logic proper to foundations and methodology of classic grounded theory, with a vertical logic, through which connecting cases and collected data in a causal way and identifying the connections between social relations and the macro context that shape them. In the words of Burawoy:

> "This would be the strategy of inductive generalization, namely to seek out *common patterns among diverse cases*, so that context can be discounted. This might be called the segregative or horizontal approach, in which cases are aggregated as though they were independent atoms. The extended case method, on the other hand, deploys a different comparative strategy, *tracing the source of small difference to external forces*. This might be called the integrative or vertical approach. Here the purpose of the comparison is to causally connect the cases. Instead of reducing cases to instances of a general law, we make each case work in its connection to other cases." (Burawoy 1998, p. 19)

Embracing context is essential for compatibility with CPE, as it is the search for a certain degree of generalization achieved through the reconstruction of a theory, its deepening, and, if necessary, the refutation of certain aspects. Ethnographic research, therefore, does not aim to deduce a new theory directly from data but is theoretically guided by abstract pre-conceptions, such as the middle-range concepts proposed by CPE, particularly the concept of the imaginary. By combining discourse analysis and ethnography, CGT emerges as a methodology well-suited for operationalizing CPE, thus facilitating the analysis of imaginaries not per se but in relation to social practices, strategies, and projects through which they are practically enacted (Fairclough 2010). Moreover, CGT can inspire any research endeavour based on ethnographic methods that aims to critically reconstruct theory from collected data:

> "However, CGT as a new critical method combining ethnography with substantive theoretical work and/or CDA quite arguably has broader purchase than serving to operationalise CPE. Indeed, CGT holds promise for any ethnographic research that aims to critically reconstruct (as

> opposed to naïvely discover) theory from empirical data as long as it accepts the ontological and epistemological foundations of critical realism. CGT centres on the retroductive movement from abstract and simple to concrete and complex and back. As such, it is designed to grasp the dialectics between macro and micro, structure and agency, global and local and discourse and praxis. Employing abstract pre-conceptions, for instance the middle-range concepts proposed by CPE, as guides, or soft hypotheses, CGT can through ethnographic research generate empirically grounded accounts of the everyday and put these into dialogue with existing theory in order to deepen, broaden and refine our theoretical knowledge, challenge existing explanations, or find new connections. Constituting integral parts of the process, CGT's critical credentials are strong. (…) Empirical research that employs CGT as a core method, whether in the context of CPE or another theoretical approach, will show the usefulness of this method as it helps critical theorists to better ground their research empirically, discourse analysts to expand their considerations of the everyday and ethnographers to better contextualise their research theoretically and societally." (Belfrage and Hauf 2015, p. 337)

3.3. The construction of a research agenda and a framework for the analysis

The last section is dedicated to the construction of a research agenda and a framework for the analysis, taking into account both the ontological and epistemological issues of CPE and the critical observations reported in the second section. It is important here to recall the main features of the CPE approach, particularly with regard to the construction of research agenda and method, as summarised by the main exponents:

> "It takes its bearings from six major themes: (1) the two modes of complexity reduction, namely, semiosis and structuration; (2) the different levels at which semiosis and structuration and their interaction can be studied and, relatedly, the need, whether one begins with semiosis or structuration, to introduce the other side sooner or later and integrate it into the analysis; (3) the coupling of the discursive and "material" moments of social practices, highlighting their respective modes of variation, selection and retention at this level of analysis; (4) as an important conclusion from these three themes, the recognition that, in addition to the semiotic and structural moments, each with its own selectivities,

> there are two further modes of selectivity that cross- cut them – namely, technological and agential; and (5) the argument that the differential articulation of these four modes of strategic selectivity, when condensed into dispositives, shapes both the semiotic and "material" moments of the dynamic of social relations. A sixth point is that the weight of these selectivities varies at different stages in the variation, selection and retention of actions to resist, restore, reform or radically transform social relations. In sum, CPE explores the uneven interaction of the discursive and the material as mediated through four forms of selectivity – with agential selectivities as the efficient force in social transformation. These six themes are elaborated in relation to the semiotic and substantive aspects of social practices. Thus CPE considers not only how texts produce meaning and thereby help to generate social structure, but also how this is constrained by emergent, non-semiotic features of social structure as well as inherently semiotic factors." (Jessop e Sum 2013, p. 198)

Adopting this approach facilitates a deeper examination of the discursive features of capitalist social relations and how they are mutually implicated with structural features in the production of hegemony. The latter can then be explored via questions such as:

> "(1) where do particular policy ideas and their related discursive networks originate; (2) which actors, individual and collective, get involved in the policy discursive networks that construct objects of economic governance; (3) what ideas (or knowledge brands) are selected and drawn upon to recontextualize the referents of these objects; (4) how do these ideas enter policy discourses and everyday practices; (5) how do these modes of thought discipline and/or governmentalize the organization of spaces, policies and diverse populations; (6) how do they become part of the hegemonic logics and challenge by diverse social forces; and (7) how are they challenged and negotiated to maintain unstable equilibria of compromise?" (Sum 2009, p. 186)

Focusing on issues as *what* kind of policy ideas and economic imaginaries are selected and *how* they develop; *who* gets involved in the discursive networks that cut across diverse institutional orders and civil society, CPE focuses the discursive-material dimensions in the study of policy-making and provides useful tools to analyse the interaction among policy discourses and structure in the production of hegemonic policy discourses and practices (Jessop 2009).

The analytical framework proposed for the research on Rome Technopole policy is inspired by these principles and takes into ac-

count the proposal to overcome some of the criticalities of the empirical application of CPE through the use of grounded methods that complement discursive analysis. As we have seen in section 1, CDA serves as a methodological complement to critical political economy within the heuristic scheme of CPE. This version of CDA is presented as an overall approach rather than a methodology, focusing on the connections between text and context, and arguing around the triad of language-ideology-power. It uses a variety of methods, including grounded ones such as interviews, observations and focus groups. The critical remarks in the second paragraph – which probably exaggerate certain aspects, as is often the case in theoretical and intellectual debates – should therefore be seen as an invitation to broaden the heuristic schema of CPE; the proposed continuous movement between theory construction and ethnographic fieldwork can indeed help to define the coordinates of the research agenda, albeit inspired and oriented by the central concepts of CPE's theoretical construction, such as imaginaries and strategies.

It should also be emphasised that even the first stage of defining the social process to be analysed and the research questions implies a reference to broader theoretical frameworks. This is certainly the case with this research, in terms of the questions that guide it – which interrogate the relationship between innovation policies and accumulation strategies, both at a more general theoretical level and in the specificity of the context analysed – and in terms of the interpretive key chosen – that is, imaginaries and their process of affirmation – and the more general theme of interest that drives it, power and the processes of production of hegemony.

On the basis of these considerations, the first phase was devoted to defining a specific social process as the object of analysis, i.e. the construction of innovation ecosystems in an urban context, and the specific policy selected for its relevance in the given context. In this phase, a monitoring and analysis of the local press and political documents was carried out, not only those specifically related to the RT project – such as official acts produced by local political institutions – but also policy guidelines and strategic policy documents on research and innovation issues, such as: the Smart Specialisation Strategy 2014-2020 and 2021-2027 – which, as we shall see, define the sectors of regional strategic specialisation on which the RT project's activities are focused – and the Plans for the employment

of the European funds PR-FESR and PR-FSE, for the Lazio Region; the Strategic Lines of municipal administration, a strategic plan for technological innovation named "Roma Tech Business", various documents relating to actions undertaken for research and technological innovation – such as "Roma Innovation", "Roma smart city", "Casa delle tecnologie emergenti" – for the municipality of Roma Capitale. This activity of analysing the press and documents also accompanied the subsequent phases of the research and continued to suggest partial adjustments to the analytical framework developed. The bibliographical research on the political-economic system of Rome also served to define the contours of the context in relation to which the specific policy analysis was to be carried out.

Following this initial exploratory phase, and on the basis of the indications obtained, a framework was developed for conducting and analysing interviews with the actors involved in the project. To this end, possible dimensions relevant to the analysis of the relationship between policies and strategies were identified, each of which was operationalised through a specific set of questions oriented towards the cognitive objectives identified, as will be explained in Chapter 5, dedicated to the discussion of the data obtained through the interviews. The interviewees were selected from among the representatives of the companies, political institutions and universities involved in the RT project. After making attempts with a larger number of possible interviewees, the following names were contacted and interviewed, who still ensured a satisfactory range and quality of interlocutors:

- Prof. Luciano Galantini, from Sapienza Università di Roma, coordinator of Spoke 6;
- Prof. Giovanni Betta, from Università degli studi di Cassino e del Lazio Meridionale, coordinator of Spoke 4;
- Prof.ssa Ilaria Baffo, from Università degli studi della Tuscia, coordinator of Spoke 5;
- Prof. Marco Simoni, Representative of Roma Capitale in the Board of Directors of the Technopole Foundation;
- Dott. Antonino Galletti, Representative of Lazio Region in the Board of Directors of the Technopole Foundation;
- Dott. Franco Alberto Fossati, Scientific Director of the Rome Technopole project;
- Dott. Mauro Cislaghi, from BV Tech S.p.A, coordinator of Flagship Project 4;

- Dott. Filippo De Stefani, from Leonardo S.p.A, coordinator of Flagship Project 5;
- Dott. Giovanni Campolo, from Thales Alenia Space Italia S.p.A., coordinator of Flagship Project 6;
- Dott. Augusto Giardini, from Catalent Anagni S.r.l., coordinator of Flagship project 7.

The interviews were conducted between January and March 2024.

In line with the heuristic framework proposed by the CPE, this phase also involved the development of a schema incorporating the action of the four selectivities and their interaction in the specific process analysed:

- With regard to structural selectivity, the challenges posed by the Covid-19 crisis and the paths identified for recovery must be taken into account, with a predominant role played by supranational bodies and the state; the selectivity of neoliberal accumulation and the rise of the KBE, both from a discursive point of view and in terms of the influence exerted on political paradigms, particularly in the field of innovation and research and the HER; constraints resulting from the local system of political economy; all the issues highlighted at the beginning of this paragraph with regard to the study of policy-making, which the CPE observes as indicators of structural features in the production of hegemony.
- In terms of agential selectivity, we need to consider the role of nodal actors at different scales and locations (e.g. OECD, European Commission) that provide simple and easily transferable policy toolkits; the role of the state; the actions of local political and economic actors that pursue their own strategies.
- In terms of discursive selectivity, it is relevant to observe the constitution of genre chains[3] of innovation and KBE and their recontextualisation in a specific site, and the articulation between consultancy reports, policy papers and speeches, conferences, forums, public debates and events, newspaper articles and interviews.
- With regard to technological selectivity, the role of knowledge technologies in meaning making processes must be considered, such as technologies of performance and judgement (rankings), technol-

[3] More specifically, genre chains (Fairclough 2003) comprise activities and documents, and, in the field of policy formation, these include consultancy reports, forum meetings, speeches, policy proposals and the like.

ogies of agency (policies – promotion of technology, innovation, education and training); knowledge apparatuses (e.g. consultancy reports, plans, programmes, guidelines, standards, codes of conduct, best practices, figures, indices, targets, scorecards, etc.); modalities of expertise of key agents (e.g. top academic economists, management gurus, OCDE/EC officials, standard-setting agencies, politicians, opinion makers, etc.).

As will be discussed in the conclusions, it has not been possible to analyse the impact of all selectivities and all possible interactions between them. The chosen entry points are the discursive and agential ones, with questions of structural and technological selectivity remaining more in the background. This is also in line with the heuristic agenda of CPE, and the proposed framework can form the basis for extending the analysis on the base of further research questions.

The data collected through the interviews and other sources of information was then grouped according to the dimensions that had initially been identified as determining factors in relation to the research questions, i.e. the development of the action; the characteristics of Rome's political economy system as result from a research literature review and as perceived by its main actors; the changes in the institutions of HER. Within each dimension, the data was organised on the basis of the cognitive objectives outlined at the beginning, from which the set of questions for the interviews had been derived. This highlighted the links between different dimensions, which were then discussed in the conclusions. This analytical work made possible and necessary the overall reorganisation of the framework, leading to the redefinition – which, of course, is not a definitive definition – of the dimensions of analysis, which are discussed in Chapter 5.

The final stage involved the formulation of "soft hypotesis", discussed in the conclusions, about each dimension and their intersections, which provide the perspective used for addressing issues related to the research questions that guided the analysis. The conceptualisation that emerges is, of course, not definitive, but is intended to inform a new cycle of grounded research, leading in turn to a new theorisation – the aim not being to build a new theory, but rather to further elaborate the concepts chosen to guide the analysis.

4. The political economy of Rome and its ambivalent development

4.1. Different perspectives on the political economy of Rome and its development

According to one of the interpretations present in the discussion, the system of relations between politics and the economy in Rome has long had the characteristics of a peculiar urban regime – a long-lasting coalition based on cooperation between political, economic and social actors that produces common political agendas (Stone 1989) – within which different actors have played complementary roles, mainly landowners and developers, banks and investors, political leaders and local administrators, as well as public and private companies, national politicians and government officials (d'Albergo and Moini 2015). This regime was based on an urban economy that was historically little internationalised, with limited wealth, hardly attractive to foreign investment and largely protected from global competition. Industry, especially innovative industry, has not been at the centre of this system for a long time (d'Albergo et al. 2018). The protagonists of this economic model were small local businesses, public utilities, large former state companies, tourism and the tertiary sector. In particular, Rome's economic development model has been described as dependent on the peculiar "Roman rents" (Benini and de Nardis 2013): on the one hand, real estate and land rents, which have also made it difficult to implement an urban planning policy for public purposes; on the other hand, public investments stemming from the status of capital city – from which the construction industry has benefited, both in terms of residential and commercial construction, favoured by substantially deregulated planning (Pizzo and De Salvo 2015) and public works and

infrastructure contracts – to which is added the symbolic legacy of historical and cultural heritage (Tocci 2020).

From this model derived a connective tissue based on mediation between political and economic elites, who sometimes competed with each other for specific lines of business. The corresponding forms of economic governance were quite complex, both horizontally – involving local actors of different kinds, public and private – and vertically, between different levels of political power. This system reproduced itself over time, starting from the era of directly elected mayors, that is, from the beginning of the 1990s, through different cycles of local and national politics (d'Albergo and Moini 2015).

After the election of Mayor G. Alemanno (2008) and later of Mayor V. Raggi (2016), with two significant electoral changes, the lack of cooperation between the political elites at different levels and the start of a more decisive austerity policy have compromised the cooperation based on public spending for Rome. At the same time, the dynamics of public investment of the Municipality of Rome suffered a contraction three times higher than the national average in the period 2009-2013 and eleven times higher in the period 2014-2019 (Causi 2021), a collapse that reversed the positive dynamics of investment recorded in the previous period (Roma Ricerca Roma 2021). Specific and illustrative examples of the failure of inter-elite cooperation concern the politics of the Olympic bids, which demonstrate the failure of two fundamental political ingredients in the reproduction of the coalition between multilevel politics and the economy in Rome: inter-institutional cooperation and the legitimisation of state allocations to the capital city by national elites, which, together with the poor municipal spending capacity, led to the collapse of public investment (Tocci 2020).

In Rome, therefore, from the second decade of the century onwards, explicit metagovernance[1] strategies and practices relating to the

[1] For *metagovernance* (Meuleman 2019) is meant a set of strategies and practices of transformation or adaptation of governance forms aimed at reducing the risks of failure of collective action, especially through the dosage of integration principles (authority, negotiation or cognitive and value sharing) and the manipulation of rules and tools. Metagovernance processes can not only be more or less politicized but also, in turn, introduce governability into governance ecosystems by dosing the degree of politicization and depoliticization. Among the metagovernance practices classified by Jessop (2011) there is – still weakly developed in Rome, but recently with more intensity and only in the field of research and innovation – the elaboration through processes of sense-making of a common vision of the world between

adjustment and maintenance of forms of public-public and public-private relations have been largely absent or blocked by mutual vetoes, if we disregard the rhetoric and the repeated demands for "special powers" to give the local government autonomy vis-à-vis the region and the state, or, conversely, the hypotheses of state management of local public action (Tocci 2020). Some political and economic actors feel the need to change the frameworks of action and build a more effective governance ecosystem, but overall, we remain in a balance between expectations of a return to the previous regime of relations of the "Rome model" of the 2000s and its concertation practices, which seem to have been "suspended", and the identification of innovative models of economic growth and governance.

Since the following decade, with the de-institutionalisation of the concertative system and the lack of mediation between local economic interests by the political leadership, the contentiousness between the municipality, the region and the national government has also increased, even during periods of coincidence in the political leadership. Thus, after the crisis of reproduction of the "Rome model", an apparent stalemate in the forms of governance has been observed, with the persistence of a high degree of politicisation in institutional relations and a lack of exchange and trust between economic interests and politics. Until recently, the partnerships that usually have been central elsewhere to the promotion of extra-economic factors of growth, such as physical infrastructures and global positioning, pursued through major events and the construction of innovation ecosystems (d'Albergo et al. 2022), have not been created. In addition, there was a lack of willingness to pursue joint projects that can be presented as non-conflictual. This stalemate increased the uncertainties and risks, and even large companies (many of them formerly public) based in Rome have not yet identified the city as a place of engagement (Cox 1998) with attractive characteristics beyond the specificity of being the national capital.

The Covid-19 crisis and its consequences seem to have changed some characteristics of this scenario, with the emergence of a new climate of trust between the main private actors and institutions: companies appreciate the role played by the region in supporting the economy during the crisis and in relaunching a development perspective,

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social forces with different identities and interests, which stabilizes orientations, expectations and rules of conduct of the actors.

including the industrial sector. In particular, as the implementation of the RT project will show, there is greater alignment between private, public and knowledge actors with the dominant public framework for action in the field of research and innovation, already consolidated in other international urban contexts. Indeed, there is a growing common reference to the innovation ecosystem as a set of virtuous interactions between the education system, research, companies and institutions (d'Albergo et al. 2022; Fasciani 2021).

With regard to innovative governance models, among the themes that have gained increasing interest in the reference literature there are precisely those of the shrinking presence of the State in the provision of public services, the ever-increasing presence of private actors in the formulation and implementation of public policies, the growing relevance of "instruments" in the implementation of particularly complex programmes and decisions (Lascoumes and Legales 2007). With regard to this frame of reference, which highlights the need for new organisational configurations mobilised by local governance systems to produce "complexity policies" – sets of actions and actors that explicitly consider their objects of intervention from a trans-scalar and transdisciplinary perspective – the marked peripherality of Rome in this evolving landscape has been observed (Coppola and Punziano 2018).

If policy innovation involves the construction of multi-actor strategic frameworks, the co-production of scientific knowledge for use in public policy, the preparation of experimental and laboratory exercises for policy innovation and, finally, the effective integration of the municipal administration – but also other relevant urban actors – into international networks, Rome's local governance system today appears hardly innovative. This lack of innovation has its roots in a weak, uncertain and predominantly rhetorical penetration of the organisational tools typical of strategic approaches to urban policy, although attempts were made when implementing locally the 100 Resilient Cities project[2]. The successive plans of the last thirty years, although at least rhetorically inscribed in this vein and dealing with issues of complexity, have proved to be insufficient and have failed in their implementation, demonstrating the difficulty with which the city approaches the field of policies of complexity. Moreover, the involvement in the main international networks still seems limited and

[2] http://www.urbanistica.comune.roma.it/roma-resiliente.html

less evident than in the case of other cities, even though the presence of national scientific institutions, large universities, advanced companies and, more generally, highly qualified human capital, could lead to forms of local adaptation and reinvention of organisational configurations (Coppola 2018).

From the point of view of the economic development model, technological innovation is one of the main areas of experimentation. In the Roman context, there are many high-tech production activities in sectors such as aerospace, audiovisual and ICT. However, this part of the economy is experiencing a period of contraction that started before the 2007/2008 crisis and continued even when almost all other sectors were growing (Roma Ricerca Roma 2021). Nevertheless, high tech and technological innovation have been the subject of considerable investment in recent years, both symbolically and in terms of the actions carried out. In fact, there are several initiatives promoted by political and economic actors to support technological innovation processes, with a leading role of the Region, in collaboration with public and private universities, companies and professional associations (Fasciani 2021). These actions, as already said, have already highlighted a convergence around the dominant public action framework in the field of research and innovation, which implies the construction of innovation ecosystems.

Despite these efforts, it is still difficult to create a productive and financial context capable of supporting innovation throughout the product life cycle, in order to ensure that successful initiatives do not move elsewhere. In particular, the need for medium- to long-term support from the public sector has been highlighted as a fundamental element in emerging innovation economies (Roma Ricerca Roma 2021).

From a different perspective, it has been observed how during the transition to post-Fordism, and in particular since the 1990s, Rome's development model has incorporated new elements at the economic, political and social levels, drawing on the discursive and material repertoire of the KBE, which coexist with the characteristics of the political economy system just mentioned.

During the 1970s and 1980s, Rome underwent a modernization process, marked by private firms shifting their investments toward both traditional and advanced tertiary sector. This shift spurred significant growth in Rome's economy, even as Italy as a whole grappled with the Fordist crisis. Social and political transformations within Rome during this time also influenced its economic trajectory. The emphasis

on the service sector not only fuelled regional economic growth but also reshaped the area into a "tertiarized region", where economic and non-economic factors interacted to shape production and reproduction in innovative ways. A pivotal moment for Rome came in 1993. While the political and economic crisis that struck Italy in 1992 had an important impact on the city, it did so in distinct ways. Unlike the broader national economic crisis or the typical Fordist/post-Fordist shifts seen in other cities, Rome's experience diverged. The city paradoxically continued to outperform the national economy during this period, despite lacking a "indigenous" economic identity, as its economy heavily relied on sectors like real estate, construction, tourism, and public administration. The core of Rome's crisis was largely political, stemming from a crisis of legitimacy both in politics in general and in the state. (De Muro et al. 2011)

In a time of great uncertainty and political tension, new approaches and strategies were essential to address the political and moral crisis and to lay the groundwork for renewing alliances among social groups. Political action was necessary to shift social dynamics, lessen the impact of the crisis, and bring stability, within the limits of the social context's structural weaknesses and inherent challenges. Starting from 1993, strategies began to emerge to reposition and rebrand the city. These rebranding efforts gained momentum and became more cohesive under Mayor Walter Veltroni's leadership (2001–2008), evolving into the "Rome Model" (Modello Roma) (Fotia 2006; Veltroni 2006). Rome was thus presented as a modern economy driven by knowledge. A multilevel coalition led by the Mayor implemented a complex development strategy aimed at carving out a competitive niche for Rome and enhancing its image nationally and internationally. The "Rome Model" worked to justify current development strategies by referencing "past failures" (such as reliance on the national government and certain political-economic actors), "future opportunities" (Rome as a global city), and "present achievements" (the city's transformation and its new emphasis on creativity, innovation, and experimentation as a shift from the former bureaucracy-driven image). This strategy aimed to reposition Rome within global power networks while integrating themes of social and solidarity concerns, building on interrelated pillars that can be viewed as the economic, political, and social facets of development (Rodaki 2012).

In particular, from an economic point of view, the growth of the Roman economy during the modernization process in the 1990s and 2000s has been highlighted. It is no longer only a cumbersome system based on bureaucracy, national politics and Rome's position as capital city and the location for the headquarters of state-owned enterprises as it was immediately after the second world war. Instead, sectors such as the advanced tertiary sector, i.e. research and higher education, business services, the cultural sector, etc. have assumed greater importance, outlining an unstable accumulation regime in which the relevance of the role of KBE is growing (De Muro et al. 2011).

In any case, it is important to stress that these considerations predate the economic and financial crisis and, in particular, its consequences in terms of austerity and budgetary constraints, which are discussed in this section.

4.2. The Italian National Recovery and Resilience Plan and the Rome Technopole project

The discourses and practices on KBE, as well as on the transformation of higher education institutions towards an entrepreneurial model and greater collaboration with industry, have also permeated the regulatory initiatives promoted by the European Union, and thus by individual member states, to recover from the crisis caused by the Covid-19 pandemic.

The European Union responded to the Covid-19 pandemic crisis with the Next Generation EU (NGEU), a programme of unprecedented scale in terms of available resources, including investment plans and structural reforms. Italy is the first beneficiary in absolute terms of the two main instruments of the NGEU: the Recovery and Resilience Facility (RRF) and the Recovery Assistance Package for Cohesion and the Territories of Europe (REACT-EU). The RRF mechanism requires Member States to present a package of investments and reforms, for which the National Recovery and Resilience Plan (PNRR) has been proposed and approved, divided into six missions and sixteen components.

In its premises, the document launched by the government identifies the main criticality of the Italian economy in the disappointing performance of productivity, due to the inability to seize the opportunities of the digital revolution, the lack of adequate infrastructures, the structure of the productive fabric – characterised by a prevalence of

small and medium-sized enterprises, slow to adopt new technologies and to move towards production with higher added value – as well as the decline in public and private investment, which has slowed down the necessary processes of modernisation of public administration, infrastructure and production chains.

Mission 4 relates to education and research and aims to "strengthen the conditions for the development of a knowledge-intensive, competitive and resilient economy, based on the identification of critical issues in our education, training and research systems". Among the critical issues identified, those most relevant to higher education institutions and the research they support are the low level of expenditure on R&D, for which "the recovery and support of public and private investment in R&D" is "an essential condition for closing the gap in the productivity levels of the factors of production (capital and labour)"; the reduced demand for innovation, due to the predominance of specialisation in traditional sectors and the structure of the industrial fabric, which limit the potential use of the scientific and technological base the limited integration of research results into the production system, since "the Italian technology transfer system suffers from numerous structural and organisational problems that prevent the transfer of research, even in the many areas of excellence, and its valorisation in terms of patents, commercial agreements and the creation of new companies" (Italia Domani – PNRR, author's translation).

The strategy outlined in Mission 4 is divided into various objectives, including the strengthening of research and the dissemination of innovative models for basic and applied research carried out in synergy between universities and businesses, and the support of innovation and technology transfer processes. In particular, the second component, "From research to business", with a budget of 11.44 billion, aims to increase the growth potential of the economic system by "promoting the transition to a knowledge-based development model" through a significant increase in the volume of R&D spending and more effective cooperation between public research and the business world. The lines of intervention envisaged cover the entire chain of the research and innovation process, from basic research to technological transfer, with measures that differ both in terms of the degree of heterogeneity of the networks between universities, research centres/institutions and companies and in terms of the degree of technological maturity or TRL (Technology Readiness Level), and are in line with the priorities of the

National Research Plan (PNR) 2021-2027 and the pillars of the Horizon Europe programme.

Among the various investments, there is a specific line dedicated to the "creation and strengthening of innovation ecosystems", with an investment of 1.3 billion euros to finance 11 projects that must promote "innovative training activities carried out in synergy between universities and businesses", "research activities carried out and/or research infrastructures created jointly by universities and businesses" and support activities for start-ups.

Innovation Ecosystems are networks of public, private and knowledge-based actors who "intervene in areas of technological specialization consistent with the industrial and research vocations of the reference territory" – in line with the indications contained in Smart Specialization Regional Strategy[3] – "by promoting and strengthening collaboration between the research system, the production system and local institutions", they work to facilitate "technological transfer and accelerate the digital transformation of companies" production processes" (Call for the presentation of intervention proposals for the creation and strengthening of innovation ecosystems[4])

Each ecosystem must be organised with a Hub&Spoke type governance structure. The Hub, made up of public universities and public research organisations, is the implementing body responsible for setting up, implementing, coordinating, managing and reporting on the Innovation Ecosystem. The Spokes, made up of universities, public research institutions, other public or private entities specialised in skills, technologies or functions consistent with the objectives of the project proposal, are the implementing entities involved in the implementation of the activities of the Innovation Ecosystem.

The Rome Technopole is one of the 11 projects that have passed the evaluation phases and received funding of 110 million euros[5]. In the process of constructing the proposal and candidacy for the tender promoted by the Ministry of University and Research the industrial capital of the region played a central role through its highest representative body, called Unindustria. Its President, in particular, made it a central issue in

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[3] https://www.lazioeuropa.it/s3/

[4] https://www.mur.gov.it/it/atti-e-normativa/avviso-n-3277-del-30-12-2021

[5] https://www.ilsole24ore.com/art/rome-technopole-via-l-estate-partono-primi-laboratori-AEqk2NgB

dozens of interviews given to local and national newspapers, hearings at political institutions and events, defining the Technopole as an initiative capable "of changing the development trajectories of the City and of the Region" (Corriere della Sera Rome, 17 December 2020), to "relaunch the economy of the Lazio Region" and "to give our country high-profile professional figures in some sectors that are crucial for the future" (Camilli Hearing – Commission Lazio Region on economic development, 18 March 2021) as well as "creating collaboration between the world of higher university education and research and that of businesses" (Camilli speech – presentation event of the Technopole, 1 March 2023).

The project was welcomed and relaunched by the Sapienza University of Rome, which acted as promoter, as a proposing public body, within the tender promoted by MUR. The form of governance chosen was the creation of the Rome Technopole Foundation, chaired by the Rector of Sapienza, Antonella Polimeni, and whose "founding promoters" are: the three public universities of Rome – Sapienza, Tor Vergata and Roma Tre; the local political institutions – Lazio Region and Rome Capitale; the main representative bodies of the entrepreneurial and business world of the region – Unindustria and the Chamber of Commerce, Industry, Commerce and Agriculture of Rome. These actors are joined by other public and private universities, national research bodies, large multinational and non-multinational companies based in the region and some SMEs, banks and venture capital funds.

The aim of the foundation is to promote "a multi-technological and transdisciplinary centre for education, research and technology transfer in the sectors of regional strategic specialisation: energy transition and sustainability, digital transformation, biopharmaceuticals and health" and to carry out activities relating to, among other things, "the technological transfer of the results of scientific and technological research" (foundation statutes). Of the six spokes that make up the Technopole structure, the second is specifically dedicated to "technology transfer, new entrepreneurship, business incubation and acceleration", which aims to promote "the actions necessary for the exploitation of the research results developed in the universities and research centres located in the regional territory for the maturation of the "Technology Readiness Level" (TRL) of the research products from TRL 4 to TRL 6 towards industrialisation and commercialisation, with particular emphasis on the

involvement of the stakeholders through the creation of communities on the three smart specialisation areas (EnT, DgT, H&BP)"[6].

Following the presentation of the project and the various lines of intervention envisaged, and the appointment of the management bodies, including the Foundation's Board of Directors, the actual activities began with the publication of a series of open calls for proposals to finance technology transfer activities from universities to firms, through projects characterised by an increase in the level of technological maturity (TRL), through the provision of non-repayable financing, in line with European legislation on R&D[7].

[6] https://sites.google.com/uniroma1.it/rome-technopole/chi-siamo/spokes/spoke-2

[7] https://www.un-industria.it/canale/ricerca-innovazione/notizia/118565/rome-technopole-aperto-il-primo-bando-a-cascata/

5. The results of empirical analysis

5.1. Development of the action, governance and organization issues

The issues concerning development of the action, which are dealt with in detail in this section, constitute a relevant dimension for the analysis I am carrying out. The various issues addressed, which stem from the research objectives, help to shed light on different aspects of the imaginary, as will be further elaborated in the conclusions. Furthermore, in the framework of my research, through both the research questions, I try to establish a connection between innovation policies like RT and the strategy of accumulation at the urban scale.

A first point concerns the origin of the RT idea, how it gained traction and became established in the Roman context. The interviews reveal that this project acted as a catalyst for practices and discourses that have already been implemented by a variety of actors. All the interviewees agree in describing it as an opportunity to give concrete form to "an idea that was actually already there before the PNRR discourse, in fact, the PNRR was the way to bring to life an idea that already existed" (Fossati). Especially knowledge actors emphasize the role of the PNRR as a fundamental instrument, also in terms of financial resources. Of particular relevance is the reference to the most important action undertaken before the pandemic crisis, to strengthen cooperation between universities and businesses in the region, namely the "Accordo quadro" signed between Unindustria and the Lazio region's main universities in 2018. This agreement involved several working groups on topics such as teaching, professional training, research, and technology transfer, which would later be revisited and developed within the RT Spokes (Betta).

These initiatives have been accompanied by speeches in which the RT was presented as a key instrument for strengthening the city's competitiveness and development. This was done not only by Unindustria, through the voice of its president in dozens of interviews with national and local newspapers, but also by political actors and experts. For example, Simoni cites the article published with Walter Tocci (nota) in *Il Messaggero* on 9 December 2020, "Un Politecnico per ripartire dalla capitale", in which the authors argue that Rome has a central role to play in the economic development of the country as a whole, as "a capital of science and technology", and call for the creation of a structure that allows the city's potential for research and innovation to be exploited. The leaders of the flagship projects, representatives of companies, also depict the RT as an opportunity to give continuity to a series of processes already underway. The project is closely linked to the needs of the companies themselves and to the development of the competitiveness of the regional fabric, an issue that will be explored in more detail in the section dedicated to the representations of Rome's political economy system. The PNRR, and the RT in particular, provided an opportunity to "meet" and give momentum to "concepts already in nuce" (Campolo).

A similar consensus can be observed regarding the leading role played by Sapienza University, which, in the person of Rector Polimeni, will also assume the presidency of the Foundation. Already involved in the "Accordo quadro" with Unindustria, in various collaborative initiatives with local companies and in other projects within the PNRR aimed at enhancing technology transfer processes, Sapienza "played a fundamental role from the outset in bringing together all the players and ensuring that this project was realised through a major effort of exchange, preparation of documents and involvement of key stakeholders of the Lazio region." (Baffo). The recognition of the fundamental work carried out by Sapienza, particularly during the project proposal stage – which, if not properly constructed in accordance with the rather strict criteria of the PNRR call for proposals, "would not have been funded" (Betta) – is also shared by the representatives of companies interviewed, who emphasise above all the ability to coordinate the actors involved in a precise and timely manner (Campolo). Despite the great difficulties of managing such a complex "matrix" structure (Cislaghi), "La Sapienza played a preponderant role, since it was the engine that drove everything a little bit. So, at the beginning, I think there was a decisive action on the part of La Sapienza that organised things a little bit". (de Stefani).

Despite a shared recognition of Sapienza's role, there are also some critical points with regard to the proposal phase. In particular, there are concerns about the low level of involvement of companies during the project design phase, along with a lack of utilization of the skills and expertise resources that they possess in relation to the implementation of European projects. This has resulted in difficulties in establishing a coherent thread among the various partners involved:

> "The attempt to find a common thread was made at the table, in a somewhat isolated manner, with the consultants from Deloitte (note?), if I remember correctly, and therefore it wasn't the result of a collective effort. Then, when the project started, there was an attempt to give coherence afterwards, to build coherence. But I mean, there is certainly an ability to set up this kind of proposal, which cannot be invented overnight; even if you hire a consultant, while they can certainly assist with financial matters and reporting, as well as setting up the reporting framework, but to give it a specific identity is more complex." (Campolo)

Furthermore,

> "There is another issue: during the proposal phase, participants brought their research ideas, reflecting what they were already doing. We did not convene around a table, as is typically done in these collaborative European or international projects, to collectively formulate a collaborative work project. No, the ideas were all disparate. (...) Therefore, it is evident that when one presents these ideas, reaching an agreement is extremely complicated, and we found that out afterwards." (Graglia)

Another significant aspect of the analysis pertains to the challenges encountered during the project's development, as emerges from the comments of the stakeholders interviewed. Despite varying nuances and tones, all expressed critical observations regarding several facets, foremost among them the slow start of the project, which is frequently linked to the complexity of the governance structure:

> "The complexity in the first year and a half of the project was primarily related to defining a modus operandi and establishing organizational, administrative, accountability, and communication processes among affiliates, Spokes, and the Hub, because this structure is not simple or immediately comprehensible in the various communications. (...) It took a year and a half to define the rules for exchange, organization, communication, and validation of what was being accomplished." (Baffo)

Additionally, another interviewee noted:

> "We experienced a slow start. I believe this was a problem, a slow start because we may have underestimated the challenges. Also, because we were unfamiliar with the PNRR environment, the rules were not immediately clear to us; we perhaps took longer than necessary to understand them, yet we eventually implemented them." (Fossati)

While actors from universities maintain a more ambivalent position, emphasizing that certain impositions originate from higher levels, in this case the European Community (Betta), or that certain tools may even represent an opportunity (Baffo), harsher and more definitive judgments come from both political institution representatives and business leaders. The former express concerns about both the excessive burden of bureaucratic regulations "in which the Rome Technopole is immersed" (Simoni) and the "continuous changes in the administrative leadership" (Galletti), particularly referencing the frequent turnover of directors-general.

The governance and functioning of the Foundation are the subject of widespread critical observations from the business sector. Specifically, as concerns the design and proposal phase, there are complaints about insufficient involvement of businesses, and a governance model that is "heavily unbalanced towards research and universities, very university-centric," while "industrial presence is quite limited" (Campolo).

Moreover, it is stated that:

> "Governance is a weak point of the Foundation, and I attribute this to the fact that a governance structure composed of university entities, which already had their own commitments and had limited experience in these matters, was likely destined to fail or function badly, especially when they wanted to give the thing such an industrial feel. (...) The centre of gravity has shifted more towards the university. The universities hold significant weight within this Foundation, and perhaps they are not fully equipped or have not been able to set the machine in motion as it was intended." (de Stefani)

This results in a significant deficit in the Foundation's ability to establish functioning structures, which are often represented as being akin to those of the businesses themselves:

> "A Foundation that aims to manage all these aspects is like a company; I need a database, an archive of all publications, I need a structure for dis-

> semination, I need a committee that develops the strategic plan, meaning high-level management. That's all well and good, but after two years, there are still uncertainties regarding this; this is somewhat concerning. So, while the structure might work, the industrial presence is lacking, and the management leans too much towards the university side. However, that's acceptable as long as things get done. It is unacceptable not to have functioning structures after two years. (...) Universities do not engage in management; universities focus on education." (Graglia)

Additionally, the action and organizational models adopted for the various activities within the RT are influenced by the centrality given to the realms of research and education:

> "For instance, the model used for cascading calls was that of selecting a PhD candidate, while this is not the objective of a cascading call." (Campolo)

Thus, at least in the initial phase, "the machine did not work as it was expected, as it was supposed to work" (de Stefani), also with regard to the various bodies outlined in the Foundation's statute:

> "There were three committees in the structure, a steering committee, a scientific committee and a technical management committee. Among these, the only one that met frequently and gave impetus was the technical management committee. The other two committees never convened; in fact, to tell the truth, the first meeting occurred just last week. This, again, does not reflect well on the Foundation, as these bodies were established but did not convene or provide any impetus. Therefore, I repeat, the only body that actually worked during this period, met, tried to do something, especially from a bureaucratic point of view, was the Technical Management Committee." (de Stefani)

Challenges are also reported regarding the actual conduct of research activities within the Flagship Projects, coordinated by the company representatives. These challenges pertain both to the lack of a common vision, which has led to each entity proceeding based on independently chosen directives, and to the reporting procedures for activities, which have been a source of complaints from all interviewed parties, as well as issues related to financing:

> "There is no pre-allocated funding from the outset. Rather, each participant determines the research lines and activities within the Flagship,

> Spoke by Spoke, and based on the total funding they receive from the proposal, they then allocate resources according to internal dynamics." (Cislaghi)

Furthermore, it has been noted that:

> "It was quite difficult and probably still is, because this is not an industrial project; therefore, there is no precise planning, and no budget is assigned. It is something lying between research and an industrial project." (de Stefani)

Overall, a negative perspective emerges regarding the structure of governance and its functioning, for its excessive rigidity hindering the potential for innovation that could otherwise be realized through projects such as the RT:

> "In my opinion, it is a senseless model, a dysfunctional model. It was created for reasons that are unclear to me. This Hub & Spoke model is overly complicated and penalizes numerous opportunities for innovation. This is not unique to Rome; we did not invent it here; it is a model that we received from the ministry and which we share with other similar organizations funded by the PNRR. Simpler structures should have been established. This does not mean that fewer organizations should have been involved; it is indeed correct to include the organizations that have been engaged, the universities that have participated, and the businesses that have been involved; that is, the actors are the right ones, even in the correct proportions. Many governance rules could have been conceived to ensure that each actor had a role. The existence of such a convoluted and cumbersome model as Hub & Spoke diminishes the networking capacity that the center can exert." (Simoni)

The initiative taken by the industrial sector of the project is particularly significant in light of these considerations. Through a letter addressed to the Board of Directors of the Foundation, the industrial representatives highlighted the aforementioned critical issues regarding the project's governance and functioning, calling for a change in direction:

> "The industries convened, and subsequently, an official letter was sent expressing all the concerns regarding such an initiative, in the sense that the industries are investing. While universities receive 100% funding, the industries only receive 50%. Therefore, the industries are investing, but it appears that little remains of this investment if the

> Technopole continues as it is. Consequently, many industries have expressed their concerns about this structure in an official letter, and one or two – though I can't recall the exact number – have already withdrawn precisely because they did not see a viable perspective. If there is no change in direction, it is possible that this situation will worsen, in the sense that if industries are investing but do not see a future, why should they continue to do so? There was a letter from the Industrial Union to the Foundation, in which they essentially articulated the concerns I am expressing, that the mechanism was malfunctioning, that there was no viable perspective, that the governing bodies were not functioning effectively, and so forth. (…) This letter reflects the discontent, but it is not a discontent born of a spirit of controversy; rather, it is constructive discontent aimed at indicating that the current trajectory is unsustainable, and that the Rome Technopole risks incurring significant expenditures without a promising future." (de Stefani)

At the same time, with regard to the criticisms expressed mainly during the proposal and initial phases of the project, the business representatives later report a positive evolution, that is a greater involvement of companies in the management and definition of RT's activities:

> "In my opinion, the initial regulation was not an ideal one; now we are starting to have a structure and a functioning, meaning that reality has surpassed the initial regulations. It has become clear that governance must be something shared between companies and universities... or, if you will, between Flagship Projects and Spokes. (...) There is a consensus on the necessity of working together. While the initial regulations stipulated that the technical management committee was composed solely of representatives from the Spokes, who could then co-opt others, what has essentially occurred is that the Flagships are consistently present, and I believe this ultimately represents a value." (Giardini)

Furthermore:

> "In the technical management committee, which is still led by Sapienza, the coordinator of the Technopole as a whole, we, as industries, along with other industrial partners, contribute by presenting a series of instances that we have regarding the functioning of the flagship projects. We engage in discussions among ourselves as industrial partners and bring forth these requests, which may pertain to administrative,

> coordination, management, or even technical-scientific issues, within the management committee to discuss them with our academic and research partners and with everyone involved. On the other hand, regarding the recently established steering committee, our role is to similarly present our requests and viewpoints. This includes contributing to the development of technical-scientific lines for the Technopole, as well as sharing our ideas and experiences to inform a medium- and long-term vision for the Technopole Foundation and its activities, beyond the scope of PNRR funding." (Cislaghi)

More generally, and despite differing nuances, all interviewees express a positive outlook regarding the future prospects of the Rome Technopole, even after the phase of funding through the resources provided by the PNRR will be concluded. Following "a necessary and useful period for everyone to become familiar with the tools and processes, leading to a productive phase," the project is currently experiencing its "phase of maximum productivity" (Baffo). Furthermore: "We are now proceeding at a very rapid pace, (…) we are also recovering those months during which progress may have slowed down" (Galletti).

Even companies" representatives, while continuing to highlight critical aspects – especially regarding the critical mass that universities should provide, which is still considered insufficient (Campolo; Graglia), and the delay in defining a strategic plan that would make it possible to go beyond the PNRR (de Stefani) – point to an improvement in the overall functioning of the organization: "I would say that overall the results now, not so much scientific ones, but perhaps operational ones, are visible" (Campolo). In particular, the importance of the "network of relationships that has been created" (de Stefani) is emphasized, along with the innovative nature of the RT experience if compared to the context:

> "From an overall perspective, I believe that the Technopole will succeed in developing over time (...). We have already participated in competence centers such as "Cyber 4.0" in Lazio, but the experience within the Technopole is certainly much broader, less vertical (...). It is a significant experience; it is the first time I see ten or twelve different research institutions, all of considerable size, collaborating – even if with difficulty – overcoming some of the divisions, rivalries, and jealousies of the past, taking advantage of the positive cooperation, past and present, within the Technopole. Therefore, I believe it has a future." (Cislaghi)

5.2. System of political economy

The characteristics of Rome's political economy system are a relevant dimension for my analysis. Relating them to the specific policy process analysed makes it possible to understand either continuity or potential changes in their main features. From the interviews representations of these characteristics do emerge, especially with regard to the field of research and technological innovation. While the data obtained pertain to a localized context, they can also elucidate broader aspects of the interplay between policies and actors" strategies, as well as of the imaginary to which the interviewees refer. The analysis highlights two primary points of interest: first, the challenges and opportunities present within the local context, and second, the way in which an initiative such as the RT project can and should engage with these dynamics, and thus its possible impact on the developmental trajectory of Rome and Lazio region. In the interviewees" discourses, these issues are closely interconnected.

Regarding the first aspect, all the interviewees agree that Rome, and even more so Lazio, have actors, resources and processes that can provide a favourable and conducive environment for an initiative such as the RT, both in terms of the research system and the productive and industrial fabric:

> "The strong points are the substratum of high quality, both on the side of the companies, which are already internationalised, and on the side of research, which is also already internationalised, because there is not a single laboratory in Italy that does not collaborate with some laboratory in the rest of the world." (Simoni)

It is, in fact,

> "a region very rich in research centres, universities, industries, even if they are only present, perhaps without production facilities, but with a broad representation of actors that govern many of the decision-making processes of development and innovation in the region." (Baffo)

The knowledge actors primarily focus on the potential of the education and research system, emphasizing that Lazio's universities were already involved in numerous collaborative processes with industry (Galantini), even though "researchers, offices, laboratories had never been brought together into such a close partnership as they are in the

current RT experience" (Baffo). Even when compared to other regional systems and their functioning, Lazio is not "particularly backward", but rather "one of the most articulated systems in Italy, together with that of Lombardia, with the highest number of universities. In addition to universities, there are CNR, research institutes... The public administration is centred in Lazio" (Betta).

Business representatives focus more on aspects related to the industrial fabric, and highlight the potential of the Lazio region from this point of view. First of all, the interviewees focus on their own industrial sector, whether it is aerospace – "Lazio, by the way, is the only region in Italy that has all the space axes, because there are services, there is manufacturing, there are launch systems, which are not present in other Italian regions" (Campolo) – or pharmaceuticals – "These are all sector-specific factors, and as it happens, Lazio still hosts many pharmaceutical companies, given that it is one of the most significant hubs in Europe, I believe" (Giardini).

Reflections on the regional research system also concern the connection with industries and the productive fabric of the region:

> "I have experience of both the Lombardia research context, a little of the Piemonte context and the Lazio context. Basically, I see that the three contexts are more or less equivalent in terms of the drive towards innovation, each according to the impetus provided by the industrial landscape present in the area. (...) However, activities have developed that originated from and were driven by the industries that have established production in specific areas. I found very agile, streamlined realities, far from being fossilised, and that was my idea. I don't see significant differences apart from content, due to the specificity of the territory, in the spirit and the will to carry out research activities in Rome and Lazio region." (Cislaghi)

More generally, and looking to the future,

> "advanced technology" could be "one of the driving forces for the economy of Lazio, a region that aspires to be a manufacturing hub as well. We do not only work with finance; we work with industry, and therefore we seek to enhance the capabilities and market of the companies that operate in the region." (Fossati)

At the same time, the characteristics of the development model and the research system in Lazio, and especially in Rome, are also the sub-

ject of critical remarks, particularly with regard to the links between the universities and business, which are often considered insufficient. It is mainly representatives of local businesses and political institutions who express such opinions, marking a significant difference compared to the opinions expressed by representatives of academic institutions. While it is true that "there are high-tech companies in Rome", at the same time "the whole fabric around them is not high-tech, so there are some points of excellence, maybe not many, but the whole fabric is not what exists in other regions of Italy, so Lazio is not a region that is traditionally seen as an innovator" (de Stefani). The criticalities in the field of technological innovation are due to

> "historical reasons of stratification, reasons linked to size, reasons related to the fact that the old Roman economy went into crisis but was not replaced; the old model went into crisis, which was based on the public sector, old-type industry and real estate. This model was already in crisis at the beginning of the 2000s and was not replaced by anything; it was not in crisis due to the presence of a new model that took its place; it simply went into crisis. The main problem is that Rome is in a situation of very low added value creation in too many sectors, including construction, tourism, and partly in industrial production." (Simoni)

Specifically concerning the world of education and research, there is a particular complaint about the difficulty in finding and hiring suitably trained professionals, even in the sectors identified by the regional Smart Specialisation Strategy: "Today, many companies in Lazio in these three sectors have to look abroad, perhaps even to recruit young Italians who have improved their skills abroad" (Galletti).

Business representatives also stress the "lack of availability, skills and competence" (Campolo) and the lack of suitable figures on the labour market for their sectors:

> "We are aware that there is a fairly significant gap between what companies need in terms of people coming out of university and what the university is currently providing. The quality of graduates is, in my opinion, very good, or at least certainly suitable for what companies need. What is missing is the last mile, which ultimately makes the difference between having a person who comes into the company and quickly becomes operational and a person who takes a year to become operational." (Giardini)

In addition to education processes tailored to the needs of the market and companies, what is lacking is a structured system of relationships between universities, research centres and industry:

> "I see that there is still no network, I see that there are individual poles of excellence, perhaps very active. But I see islands, I see isolated poles; there is no team spirit. Innovation is unlikely to come from just one side; it requires an entire system to push it forward. What is lacking in Rome and Lazio is the system that drives this, in the sense that individuals can do little and produce little on such topics." (de Stefani)

This leads to an "under-exploitation of Roman research", such that "it is as if we were in a gold mine, even a rather shallow one, and no one has a pickaxe to dig through the first layer of rock, which is not even that thick, and to take this gold. Rome is in this condition" (Simoni).

The second relevant aspect that emerges from the analysis concerns the potential impact that a project such as the RT could have on the aforementioned context, as well as the developmental prospects it could unveil for the region. On this point, the differences among respondents diminish, revealing a shared perspective. Actors in the knowledge sector emphasise that

> "even during the presentation phases of these initiatives, there was a clear intention to create something that would yield significant territorial repercussions". Compared to other initiatives, such as National Centres or Research Infrastructures, which are often driven by objectives closely linked to research and development themes, for example, the use of human resources to foster innovation, the innovation ecosystems exhibited a distinct interest in generating initiatives with a tangible impact on specific territories." (Baffo)

The enhancement of collaboration between universities and enterprises should serve as the guiding principle of the RT project, enabling a more cohesive system and fostering a network among existing collaborations, since it aims to "connect various stakeholders, facilitating progress on longstanding initiatives, while significant strides remain to be made, particularly in bridging the gaps between businesses and universities across all sectors, from education and research to technology transfer and knowledge dissemination" (Betta).

Even more explicitly stated:

> "The objective is to create a catalyst through which the academy can serve companies, thereby strengthening the technological development of the region. This is the fundamental interest. (…) How is this achieved? It is accomplished through contracts, agreements, and so forth. For instance, what Spoke 6 does is to encourage or gather expressions of interest for the establishment of joint laboratories, involving academia or research institutions alongside private entities. This is the privileged structure of joint laboratories. The interest of enterprises should lie in this approach, and there is considerable interest." (Galantini)

Moreover, the RT serves as "a single point of access to the competencies of other partners" (Cislaghi) and

> "coordinates much more effectively, as it enables all industries to know the full potential that research institutions and universities have. (…) What the RT aims to do is collect everything, put it on display and show everyone what the Lazio region has to offer in terms of infrastructure. (…) This is another important role: to collect the major infrastructures and present them within a comprehensive infrastructure that is the RT, freely accessible to the users." (Galantini)

In this way, the RT can be a "high-level systems integrator," providing enterprises with "a single front-end, a unified interface for those seeking facilities for various needs, accompanied by an inventory of equipment that encompasses all those belonging to the partners engaged in this initiative. Consequently, this inventory is highly diverse, offering opportunities to virtually all sectors of industry" (Fossati).

The establishment of networks and connections is the objective most often cited by the interviewees, often placing it above immediate economic returns:

> "A network means that in the future I want this laboratory to no longer be sustained by company funds, but rather to be part of a broader network, expanding its audience. This was somewhat the idea, as we aim for the laboratory to become a center for accumulating relationships and research potential, which is what truly interests us. While maintaining it is important, and we may be interested in selling something, our primary interest lies in building relationships and conducting research." (Graglia)

More explicitly, another respondent stated:

> "It is certainly not economic interests that drive us, as the funding is at 50%, and the monetary contributions are very low; thus, economic interest is not the motivation. The interest has been to establish a network of relationships with all the universities in the region, to build a denser network than existed before, with increased exchanges, thereby fostering this interconnecting fabric with all universities in Lazio. The Rome Technopole has facilitated these contacts and the creation of these links. From my perspective, the main reason for participating in the Rome Technopole is to create this network with the universities and research centres throughout Lazio. The so-called ecosystem. The Technopole has certainly provided a significant boost in establishing these relationships." (de Stefani)

The establishment of stronger connections is therefore commonly recognized as a key success factor of the RT project, which has provided enterprises with "the opportunity to learn about technologies they had never previously approached, to collaborate with universities, and thus to gain additional contacts with those possessing specific knowledge" (Giardini).

The field of education is similarly a focal point of attention, both for representatives of local political institutions and enterprises. The latter express a desire for a realignment towards their specific needs:

> "We identified a pillar, which is education, aimed at bringing industry closer to the identification of curricular pathways that are more aligned with our requirements, thus facilitating a higher education that is at least more oriented toward the Lazio region." (Campolo)

Whereas in the past "it was the company itself that gradually equipped employees with the skills and experience to tackle increasingly complex issues related to its core business", the RT project offers the opportunity to provide "multidisciplinary knowledge" as well as to "connect researchers with companies, thereby preparing them for a potential entry into the company's field of activity with greater competence" (Fossati). Furthermore, it also ensures the possibility of "direct engagement with the heads of degree programs and department heads. This, in some sense, means connecting job supply and demand and bringing universities closer to the industrial world" (Giardini).

The RT has the merit of

> "addressing a gap that existed in providing our qualified youth, who wish to engage in these sectors, with a specialization pathway in Lazio, coordinated and managed in conjunction with the presence of the companies where they may ultimately find employment. In this way, it effectively aligns the demand for education with job supply and demand. It is an ambitious project; however, it is an attempt that exists in other contexts, both European and international. Thus, it is appropriate to utilize funding from the PNRR and that of the Lazio Region to fill this gap. The region expects to see employment repercussions, particularly for young people, and to provide the companies already established in the regional territory with highly qualified human resources from which they can draw." (Galletti)

More modest expectations are expressed regarding the possibilities of developing tangible and actual products:

> "It is evident that it will be challenging to arrive at a final product by the end of the three years; however, what will certainly emerge at the conclusion of this period is the improvement of technologies at a low Technology Readiness Level (TRL), elevating them to a pre-competitive stage. Undoubtedly, what will happen is that there will be technologies that undergo a maturation process, and the Technopole has facilitated this maturation process." (de Stefani)

At the same time, on a broader level, the RT project can be a component in the wider transformation of the urban economic fabric:

> "Rome must transition from a low-value-added model to a high-value-added one, and this can be achieved in various ways. Urban regulation plays a role, but so do investments. In terms of the industrial sector, it is essential that Rome begins to invent products with market applications. This is how we shift from low value creation to high value creation." (Simoni)

5.3. Changes in HER institutions

Changes within Higher Education and Research (HER) institutions are a significant dimension in my analysis, as I am examining a policy that entails the participation, even in leading roles, of academic and research institutions.

This is a substantial novelty in the nature of the institutions involved, which were already engaged in collaborative initiatives with local enterprises and in multiple third mission activities. However, the RT project is a further advancement, not merely in systematizing existing practices but also in the evolution of the institutions themselves, which can be transformed by these interactions. Their participation can be interpreted as an additional shift toward an entrepreneurial model, particularly concerning the alignment with the needs and demands of the Region, primarily understood as businesses and markets. This, in turn, has implications for the urban political economy, specifically that of Rome, with the entry of new actors altering their institutional roles. Therefore, this phenomenon forms another guideline through which to interpret the relationship between innovation policies and the urban accumulation strategy, which is the underlying theme of my research.

The two main issues that emerged from the analysis – the shift of universities towards an entrepreneurial model and their relationship with local development – are very closely interlinked. The whole point of academic capitalism and entrepreneurial universities lies in directing all activities, not only the third mission but also education and research, towards the needs of businesses and the labour market, particularly those within the same territory. Much has already been discussed in the section dedicated to the relationship between the political economy system of Rome and the RT project, which serves as a specific example that can help to explain some aspects of broader transformations affecting universities and research institutions, also determined by national policies that are transforming the university and public research system in Italy. This section is about more general reflections made by interviewees on the question of entrepreneurial universities.

The field of education is a focal area for all interviewees, who, with varying nuances, point to both ongoing and necessary changes in university programs to align them with the needs of companies. Education programs must be adapted to "increase their appeal from an employment perspective" (Baffo), and new courses must be established in collaboration with relevant stakeholders:

> "The meeting with stakeholders should not occur only when the course is launched, proving its usefulness, but rather should be scheduled periodically with all interested parties. Why am I offering this course?

> Because society needs biomedical engineers, telecommunications engineers, or other professional profiles. Therefore, the link between university education and the labor market is absolutely structural." (Betta)

A pivotal moment in this respect is identified in the international higher education reform process known as the Bologna Process[1]:

> "Certainly, that period marked a paradigmatic shift. Not only the 3+2 model, but also a major level of university autonomy, enabled the creation of courses more adaptable to regional needs, to different possible facets. (…) Even degree programs are subject to ongoing updates and assessments to ensure they meet expectations for employability outcomes, projected employment rates, ensuring that those who enrol then continue through the program without drop-outs. Previously, everything worked somewhat inertially. Universities lacked autonomy and were not funded based on how effectively they performed their tasks." (Betta)

Numerous third mission activities involving the university institutions are mentioned in the interviews, particularly concerning public engagement and outreach, as well as other PNRR projects in which they are involved, such as "National Centres" or "Research Infrastructures." At the same time, professors and researchers involved in the project highlight a delay in universities" adaptation to the new model. Both the issue of the third mission, especially in terms of the lack or inadequacy of structures dedicated to the management and monitoring of those activities, and the issue of education are addressed in this regard:

> "Certainly, universities have not worked to their full potential in education, specifically in lifelong learning, in continuing education at the service of companies. And this is one of the areas with considerable room for growth. (…) These initiatives stem from a meeting of supply and demand. It's all designed with the idea that it must be continually updated. A significant influence on the management of these aspects has undoubtedly come from the role of ANVUR." (Betta)

Similarly, university facilities dedicated to research activities, especially laboratories, need to be updated and made efficient and competitive to support greater collaboration with industry (Galantini).

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[1] https://education.ec.europa.eu/it/education-levels/higher-education/inclusive-and-connected-higher-education/bologna-process

While these criticisms are part of an overall positive representation, some business representatives are more convinced in highlighting what they consider to be shortcomings on the part of universities. The latter struggle to adopt the same "vision" as businesses, maintaining an "old approach, making it difficult to think about engaging in joint activities prior to the PNRR. (…) It is also a cultural issue; it's difficult to network among other research centres, universities, and industry itself. There is no habit of working with others; in reality, I conduct my research at my place, but it's not understood that 1+1 in this case should be greater than two" (Campolo). Furthermore,

> "there is always a bit of competition, even among universities, and there is always a bit of distrust in working together. Researchers are kept on a tight leash; we don't have them here with us; very few come, they work on those things, but they don't stay here with us to work, which somewhat contradicts the spirit of the PNRR in general, which aims to support young people. This still exists." (Graglia)

At the same time, representatives of companies report that relationships and collaborations have increased thanks to the growing activities carried out by university institutions in the third mission field, facilitating technology transfer processes (Cislaghi). Participation in the RT project has also allowed companies to engage with various institutions of the HER sector, thereby gaining insight into their different competencies and areas of specialization, with the aim of building something like centres of excellence:

> "The concept of a "center of excellence" implies the ability to identify specific institutions in the Lazio region as points of reference for certain activities. For example, for needs related to technology transfer and patenting, the center of excellence should probably involve the Roma Due University; for fundamental or applied research at relatively low Technology Readiness Levels, it is best to turn to "Roma Uno". Furthermore, for specific educational paths, it is preferable to refer to the University of Cassino or "Roma Tre'; finally, for outreach activities, the University of Tuscia stands out for its commitment to effectively mapping and managing initiatives in this area." (Giardini)

Central to the discourse of all interviewees, particularly concerning the RT project, is the concept of technology transfer between universities and industry. From the perspective of businesses, there is a critical

need for the establishment of enduring relationships, characterized by a "continuous technology transfer" that goes beyond isolated collaborations and individual commissions:

> "It is important to acknowledge that technology transfer, at least from my perspective and experience, is never a process that occurs on a specific day when I arrive with a box containing the results of my research and hand them over to the beneficiary. Rather, it is a shared journey in which not only technical results are transferred but also a range of competencies and knowledge. This is how we define technology transfer. Frequently, there exists a somewhat outdated notion that technology transfer involves simply commissioning a university or research center to conduct research, and they provide the results obtained, or transfer the results from independent research activities they are conducting. In reality, this is not the case. It is a collaborative endeavour. That model of technology transfer, understood as: I assign a task to be completed or obtain results from a research center, still exists, to be sure. However, I believe it is increasingly being supplanted by the concept of continuous technology transfer, in the sense that it represents a day-to-day process. Therefore, technology transfer encompasses not only the transfer of technologies and results but also the knowledge and methodologies necessary to sustain these results and knowledge over time." (Cislaghi)

Researchers involved in the project also assert that "universities can no longer refrain from engaging in technology transfer" (Betta). They emphasize the novelty represented by the cascade funding calls directly managed by universities, citing the RT project as an example of good practice in this regard:

> "With cascade funding calls, for the first time the university is no longer merely a participant in funding initiatives but rather the entity that promotes them; it is the provider of funding aimed at supporting various projects. This had never occurred before. This development has created opportunities for engagement with entrepreneurial entities interested in developing projects aligned with the themes of the PNRR initiatives, which inherently drive and stimulate research, foster technology transfer, and lead us to explore certain aspects in greater depth. Consequently, the number of collaborations has undoubtedly increased." (Baffo)

Conclusions

One premise is necessary in my conclusions. The RT project, the object of my research, is still in its early stages of development. The conclusions that can be drawn from the analysis conducted are necessarily partial and hypothetical in their nature and obviously require further investigation both in terms of theoretical development and empirical analysis. However, this is entirely in line with the epistemological coordinates outlined for the research project.

Firstly, the most pertinent issue that arises, and which is emphasised by all the interviewees, is the opportunity that the PNRR presented for the realisation of a project that had already been conceptualised, in its principal aspects, by the stakeholders, with the objective of materialising discourses that had already been articulated and of systematising a series of actions that had already been undertaken. The most important of these, in terms of the number of players involved, is the "Accordo quadro" between Unindustria and the universities of the Lazio Region, whose working tables dealt with issues that were then fully taken up in the work of the various Flagship Projects of the RT project. Additionally, the interviewees referenced numerous other pre-existing RT initiatives, particularly individual agreements between university departments and laboratories and corporate research and development departments. The RT thus can be interpreted as a catalyst, facilitating the systematic integration of these collaboration and technology transfer practices.

Moreover, the idea of a centre for research and technology transfer was already present in the speeches of several key players of the political economy system of Rome, in particular the main exponents of the organisation representing the interests of industrial capital in

the Lazio region, i.e. Unindustria. The role of a specific political entrepreneur, i.e. the Lazio Region, was also relevant in the start-up phase. Moreover, the idea of the RT was then accepted and supported by all political parties. The need to strengthen the links between universities and business in the Region in order to increase the competitiveness of the territorial production system was therefore widely shared even before the Covid-19 crisis, perceived and defined as a public problem and worthy of government action. These characteristics make it possible to interpret the process of agenda entry of the RT project through the lens of the Multiple Stream Approach.

The Multiple Stream Approach (Kingdon 2014) is based on the combination of factors that determine the entry of an issue onto the political agenda, specifically answering the question "how does an idea emerge?". The explanation is based on three variables that correspond to the main "streams": the "problem stream" (the perception and construction of problems defined as "public" because they require government action to solve them); the "policy stream" (the elaborations of experts and analysts, preferences on a given problem and the different options for political action that they outline); the "political stream" (the factors of the political context, starting with the conflict on the issue between competing political forces). The three streams flow through mutually independent channels, but in some circumstances, they may intersect and form "windows of opportunity" that are used by different actors in a policy subsystem to put issues on the agenda in which they have specific interests (Béland and Howlett 2016). The opening of such windows can be determined not only by the actions of policy entrepreneurs, but also by external events or factors, among which the emergence of a crisis stands out. When addressing a policy problem, it is therefore crucial to take into account both the discursive aspect, which concerns the way in which different actors propose definitions aimed at increasing their capacity to intervene, and the particular "critical juncture", which may act as an accelerator and bring a hitherto sidelined issue to the fore (Ladi 2016) or change the construction of the problem and solutions.

In this case, therefore, all the ingredients seem to be in place. As far as the policy stream is concerned, one can take into account both the prescriptions contained in the OECD and European Commission documents examined and the possibilities for political action offered by the PNRR. As for the factors of the policy stream, there is essential-

ly no conflict on the issue, and the RT project was strongly supported by the local political institutions, despite the change of government at both the municipal (October 2021) and regional (March 2023) levels during the period under review. Furthermore, the analysis of the policy and strategic documents on research and innovation produced by the two administrations, both before and after the electoral change, confirms the centrality given to measures to promote cooperation between universities and businesses, and often to RT itself. The speeches of all types of actors interviewed, as well as an analysis of the local press, also reveal how the problem is defined as being of public relevance and therefore deserving of intervention, especially in the context of Rome, which is considered to be lagging behind in terms of the competitiveness of the production system and the contribution that projects focused on technology transfer can make to solve this problem. Lastly, the role of the particular critical point brought about by the Covid-19 crisis, the measures taken to recover and the discourses used to legitimise them are central. In the specific case under analysis, the actors involved immediately linked the issue of recovery to the need to strengthen the local research and technology transfer system. Moreover, the actions promoted for the recovery from the crisis also bring money for public spending, a resource and glue of the political economy of Rome (between public and private; between local and national political systems) that was missing in the period 2010-2020.

The tools offered by the Multiple Stream Approach help to understand how the RT project idea came to be on the agenda, thus answering the "how" questions. On the other hand, observing the process through the lens of CPE can help to develop hypotheses, albeit exploratory, on the "why", on some of the causal mechanisms that determine the development of a given social phenomenon, questioning issues related to power and hegemony, in particular hegemonic strategies and imaginaries. In this case, the degree of penetration of hegemonic discourses in the field of research and innovation – particularly with regard to the strengthening of the link between university and business in order to build ecosystems – can help to understand at a deeper level what is explained elsewhere in terms of the alignment of flows and the opening of windows of opportunity. Although with different nuances, all the interviewees show complete adherence to the model. This is confirmed also by the analysis of the documents, in which the construction of ecosystems is a central objective of research

and innovation policies, thus confirming the process of contamination of in the specific context analysed by hegemonic discourses on innovation ecosystems. Particularly relevant is the support expressed by university representatives, who show that they have fully assumed and take for granted the need to change the nature of university institutions in order to adapt them to the needs of the market and intensify the connection with businesses. The representatives of the latter, in turn, identify the advantages of a project such as RT not in the immediate development of technologies and products that can be spent on the market, but in the construction of networks and relationships, which cause positive externalities on various levels. These include an improvement in the labour supply, with profiles that are more ready and adherent to the needs of companies, and the strengthening of the competitiveness of the entire production system. This is the most important aspect that seems to emerge from this part of the analysis, shared by all the interviewees, namely the development opportunities that a project such as RT creates for the territory, thus highlighting a strong link with the material interests of the actors involved, in particular companies.

According to the representations of the actors involved, the construction of ecosystems has a generally positive impact on the local production system, and this also emerges from the reflections on the second dimension of analysis identified, i.e. the characteristics of the political-economic system of Rome and, above all, the idea that the actors involved have of it. Through the interviews, it was possible to identify representations of these characteristics, particularly with regard to the field of research and technological innovation. The information obtained concern the specific context, but can also explain some aspects of the more general relationship between policies and strategies, as well as the imaginary to which the interviewees refer. The most interesting aspects that emerge from the analysis concern, on the one hand, the problems and potentials of the local context and, on the other, the way in which a project such as RT can and must relate to it, and thus its possible impact on the development prospects of Rome and Lazio. In the discourses of the interviewees, the two issues are closely intertwined.

Criticism is directed in particular at the underdeveloped level of cooperation between universities and companies which, according to the actors" representations, undermines the positive potential of the

context in terms of technological innovation, both on the part of research and industry. In the vision of the actors involved, projects such as the RT offer the possibility of transforming some of the sedimented characteristics of Rome's production system, identifying technology transfer as a driver of this transformation. Once again, the creation of a network is the aspect that comes up most frequently in the interviews, as the main objective also for the companies, over and above the immediate economic return on the market. What emerges is an ambivalent representation of the Roman context: the interviewees stress the existing potential that the RT project should systematise, exploit and multiply, but they also seem to be aware of the limits imposed by certain structures, also from a cultural point of view, in terms of constructing meaning and legitimising these practices. Indeed, a cultural change is also invoked, in the way of thinking and acting, in particular regarding political and knowledge actors, and RT is seen as a powerful tool in this sense, both for the internal transformation of the system and from the point of view of the image it proposes to the outside world. RT is conceived as an enzyme, the yeast that initiates and enables the development of other similar initiatives, legitimises them in the broader system of political economy, creates the favourable context for action, also from the point of view of shared visions and languages. Therefore, it also acts as a discursive resource, a model of good practice in research and innovation. Obviously, it is not yet possible to determine the concrete impact of projects such as RT in terms of actual transformations of the productive fabric, for example in the growth of some sectors in relation to others, or in the provision of tools to overcome what has been defined as the "value crisis" (Roma Ricerca Roma 2021) of the Roman economy, but research and technological innovation are certainly the object of a decisive investment, both material and symbolic-discursive, which can be seen not only from the interviews but also from the analysis of the policy documents. A relevant factor in this context is undoubtedly the recovery of public investment, which had long been a key axis of the Roman economy, but which then collapsed during the period following the 2007-2008 economic and financial crisis, characterised by the imposition of Europe-wide policies of budget cuts and austerity. The recovery plans following the Covid-19 crisis represented a change of course in this direction, but the recent come back to tighter budgetary constraints already seems to jeopardise the possibility of more expansionary policies even after the end of PNRR

funding. This is an issue that is debated and decided at other levels, even though it has serious local implications.

On the other hand, the analysis carried out can shed light on the characteristics of the broader system of relations between political, economic and knowledge actors of Rome's political economy, and on the changes that a project such as RT can bring about in this respect. The forms that the relations between the different types of actors involved in the project take, as well as the difficulties of cooperation, constitute a relevant dimension of the analysis, because they can also give indications on the broader fabric of relations in which the RT project fits, which in turn constitutes a relevant dimension of the urban political economy. Although all the interviewees highlight the positive externalities generated by the collaboration between the university and the business world, the representatives of the latter complain of a difficulty on the part of the university institutions in adopting discourses and practices appropriate to the business model. This, according to them, would also provoke the detriment of the activities and organisation of the RT, in which the universities play a predominant role. The episode of the letter of complaint sent on behalf of Unindustria to the Foundation's Board of Directors is particularly significant in this sense, and points to all the difficulties of aligning ways of thinking and acting towards the creation of an effective coalition of actors that also could have its own relevance in the broader context of Rome's political economy. The RT can also be used for this purpose, not only to systematise what was there, to give impetus to certain processes, but also to standardise discourses and practices, and to make experience of processes that can be replicated later, as the interviewees said. From this point of view, an ambivalent assessment of the action of local political institutions emerges. The contribution to the realisation of the project by both the municipality and the region is recognised, also in economic terms, but there is a certain marginality and little involvement in the actual life and activities of the Foundation, whose management seems to be the exclusive prerogative of the university-business tandem. Business representatives, in particular, speak mainly of a function of public representation, of support at a symbolic and discursive level. The national level, and thus the role of the state, seems to remain in the background, since it has only provided the tools and resources, including economic ones, for the realisation of the project. When it is directly invoked, espe-

cially by business representatives, it is from a critical perspective, as being responsible for the delays and all the organisational difficulties – in particular related to the reporting activities, the excessive bureaucratic burden and the governance characteristics of the Foundation – that have so far hampered the smooth development of the RT project. Reference to the supranational dimension and the role of supranational bodies is largely absent.

Another new element is the role of the universities and, in particular, of Sapienza, whose leadership is stressed by almost all the interviewees and is also evidenced by its role in the Foundation, both operational and representative. This is a significant novelty in the nature of the institutions involved, which had already taken part in collaborative initiatives with local companies and in numerous third mission and technology transfer activities. However, the RT project represents a further step forward, not only in the systematisation of existing practices, but also in the evolution of the institutions themselves, which can be transformed by these interactions. Their participation can be interpreted as a further shift towards an entrepreneurial model, particularly in terms of alignment with the needs and demands of the Region, understood primarily in terms of businesses and markets.

This, in turn, has an impact on the political economy of the city, with the entry of these new actors who change their institutional roles. This phenomenon thus constitutes another guideline for interpreting the relationship between innovation policy and urban accumulation strategy, which is the underlying theme of this research. The two main issues that emerged from the analysis – the shift of universities towards an entrepreneurial model and their role in local development – are closely linked. The significance of academic capitalism and entrepreneurial universities lies in the orientation of all activities, not only the third mission, but also education and research, towards the needs of businesses and the labour market, especially those in the same territory. The RT project thus is a condensation of existing discourses and processes, but there is also an awareness that it is in some ways a "vanguard", signalling the direction of an ongoing process.

As reconstructed in the analysis, over the last thirty years the city's development strategy has incorporated new elements at the economic, political and social levels, drawing on the discursive and material repertoire of the KBE. These new elements have coexisted and continue to coexist with the consolidated characteristics of Rome's political-eco-

nomic system – as evidenced also by the ambivalent reflections of the actors interviewed on the system itself.

A project such as the RT, together with the other initiatives undertaken to strengthen the links between universities and businesses from an ecosystem perspective, can provide a key to interpreting this process of transformation, bearing witness to how different actors use discursive resources to support and legitimise policies that strengthen their position in a wider context. With regard to the schema of selectivities proposed in the operationalisation phase, it has been possible to put forward interpretative hypotheses particularly with regard to the interaction of structural, agential and discursive factors, while the role of technological selectivity remains in the background and will have to be the subject of further study and analysis.

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Valutazioni della tesi di dottorato

1. Alessandro Coppola – Politecnico di Milano

I never had the pleasure of meeting Tommaso Fasciani, but I had the opportunity to review his doctoral thesis in the autumn of 2024. The thesis is of great interest. In particular, the candidate shows considerable theoretical-methodological awareness. However, at present, the empirical evidence is still lacking. Therefore, I recommend returning to the case analysis by reinforcing it through the presentation of further material in line with the theoretical methodological approach employed.

In particular, I suggest to:

- strengthen the multi-scalar view by clarifying the relationship systems activated with actors on a national scale (political class administrative apparatus, interest organisation) and any allocative conflicts that at that scale have affected the construction of that local policy;
- give more historical depth to the policy interpretation by looking at earlier episodes and how they fitted into the political economy of the city as outlined in the relevant chapter;
- strengthen the part on imaginaries (which economic and development imaginaries accompanied the coalition building).

Despite the invitation to strengthen the empirical dimension of his work, the text of the thesis had impressed me with the robustness of the theoretical frameworks and the awareness and familiarity with which they were illustrated by the candidate. Tommaso distinctly possessed some of the fundamental qualities to do our work, and to do it – which is relatively rare – with theoretical imagination and interpretive acuity.

Non ho mai avuto il piacere di incontrare Tommaso Fasciani, ma ho avuto l'opportunità di fare la review della sua tesi di dottorato nell'autunno del 2024.

La tesi è di sicuro interesse. In particolare, il candidato mostra notevole consapevolezza teorica-metodologica. Tuttavia, allo stato attuale, il rilievo empirico risulta ancora carente. Quindi consiglio di tornare sull'analisi del caso irrobustendola attraverso la presentazione di materiale ulteriore in linea con l'approccio teorico metodologico impiegato. In particolare, suggerisco di:

- rafforzare lo sguardo multi-scalare chiarendo i sistemi di relazione attivati con attori di scala nazionale (classe politica apparati amministrativi, organizzazione di interesse) ed eventuali conflitti allocativi che a quella scala hanno riguardato la costruzione di quella politica locale;
- dare maggiore profondità storica alla lettura della policy, guardando a precedenti episodi e a come si sono inseriti nell'economia politica della città per come tratteggiata nel capitolo relativo;
- rafforzare la parte sugli immaginari (quali immaginari economici e dello sviluppo hanno accompagnato la costruzione della coalizione).

Nonostante l'invito a rafforzare la dimensione empirica del suo lavoro, il testo della tesi mi aveva colpito per la robustezza degli apparati teorici e della consapevolezza e familiarità con i quali essi erano illustrati dal candidato. Tommaso disponeva distintamente di alcune delle qualità fondamentali per svolgere il nostro lavoro, e svolgerlo – cosa relativamente rara – con immaginazione teorica ed acutezza interpretativa.

2. Nils Markusson – Lancaster Environment Centre, Lancaster University

Tommaso Fasciani visited me for a few months in 2023 at Lancaster University, UK, as part of his doctoral studies. I enjoyed discussing the background for his case study, the theory he was using and his writing. It was then my pleasure to examine Tommaso's dissertation in 2024.

Overall, the thesis presents an interesting analysis of the case of the Rome Technopole, a case of developing institutions linking universities with industry in the city and surrounding region, and so a step towards realising the (contestable) ideal of the knowledge-based economy, and towards more entrepreneurial universities in the area. The thesis is aptly

positioned in the literature on the political economy of science and technology, and draws on cultural political economy theory.

This doctoral research project benefitted from the supervisor's previous work, but Tommaso has extended this to a new empirical case, through independent research and thesis production. The work is therefore original and a contribution to the literature.

Key strengths of the dissertation include command of theory and relevant scientific literature, as well as the very well-formed language!

Chapter 2 evinces a very good command of cultural political economy theory, describing well the scientific background of the project. This includes the useful and apt combination of it with critical grounded theory, in chapter 3. Chapter 2 also presents a very good overview of other relevant scientific literature. A conclusion could be added spelling out what the chapter contributes to the analytical project of the thesis, for a more explicit positioning.

The dissertation is clear to read. The language is excellent. In a few places, the sentence structure is not what a native English speaker would produce, but generally the prose is very clear and perfectly idiomatic. The dissertation would however benefit from more signposting. As is stands the text is somewhat descriptive, with the overall line of argument often left implicit for the reader to articulate. Strengthening the signposting throughout could foreground the overall line of argument more and so make the coherence of the thesis more explicit. A relatively simple way to improve the text substantially in this respect is to add short introduction and conclusion texts to chapters 1-5.

Some things could have been improved, primarily through the inclusion of a somewhat expanded empirical base, more strongly linked back to theory and literature.

The manuscript contains only one chapter (no 5) grounded in new empirical data – a set of interviews, providing the most obvious core of a potential peer-reviewed journal paper. Chapter 4 could probably also be extended to forming the core of another paper, understood as providing a novel analysis of the conjuncture of the developments that led up to and set the scene for the Technopole project. But a little more new primary data would have made this a stronger dissertation.

The results should also be linked back to theory and literature much more. This would help clarify what contribution to the literature the dissertation makes – beyond the empirical contribution that adding this new case study already makes.

Additionally, the methodology chapter (no 3) should relate to the specifics of the research project more throughout. This would further strengthen the coherence of the dissertation.

Looking back at the thesis, now, and remembering Tommaso's visit, it is clear that we have lost a promising scholar, as well as a comrade and warm and generous human being.

Tommaso è stato visiting student per alcuni mesi nella università di Lancaster (UK), come parte dei suoi studi di dottorato. Ho avuto il piacere di discutere il background teorico del suo case study, la teoria che stava usando e la stesura di alcuni suoi testi. Quindi ho esaminato volentieri la tesi di dottorato nel 2024.

Nell'insieme, la tesi presenta un interessante analisi del caso del Rome Technopole, in caso di sviluppo di istituzioni collegando le università con l'industria presente nella città e nell'area regionale circostante e quindi un passo verso la realizzazione del (contestabile) ideale di economia basata sulla conoscenza e verso università più imprenditoriali nell'area. La tesi è collocata appropriatamente nella letteratura sulla political economy scienza e della tecnologia ed è costruita sulla base della teoria della cultural political economy.

Questa ricerca di dottorato ha beneficiato del lavoro precedente del supervisor, ma Tommaso lo ha esteso a un nuovo caso empirico attraverso una ricerca indipendente finalizzata alla produzione della tesi. Il lavoro è quindi originale e propone un buon contributo alla letteratura.

I punti di forza della tesi includono una buona padronanza della teoria e della letteratura scientifica di riferimento e un linguaggio veramente di buon livello!

Il capitolo due evidenzia una ottima padronanza della teoria della cultural political economy, descrivendo bene il background scientifico del progetto. Questo include la sua. utile e appropriata combinazione con la critical grounded theory, nel capitolo tre. Il capitolo due presenta anche una ottima ricognizione di altra letteratura scientifica rilevante per il progetto. Sarebbe possibile aggiungere una conclusione precisando in che modo il capitolo contribuisce al progetto analitico della tesi per un suo posizionamento più esplicito.

La tesi è di chiara lettura. Il linguaggio è eccellente. In alcuni passaggi la struttura delle frasi non è proprio quella che un madrelingua inglese produrrebbe, ma in generale la prosa è molto chiara e perfettamente idiomatica. La dissertazione beneficerebbe comunque di più

"segnaletica". Nella sua versione attuale, il testo è in qualche modo descrittivo, con la linea complessiva di argomentazione talvolta lasciata implicita per il lettore. Rafforzare la segnaletica in tutto il testo potrebbe mettere maggiormente in risalto la linea generale dell'argomentazione e quindi rendere più esplicita la coerenza della tesi. Un modo relativamente semplice per migliorare notevolmente il testo in questo senso è quello di aggiungere ai capitoli 1-5 dei brevi testi di introduzione e conclusione.

Alcuni aspetti avrebbero potuto essere migliorati, in primo luogo attraverso l'inclusione di una base empirica un po" più ampia, maggiormente collegata alla teoria e alla letteratura. Il manoscritto contiene solo un capitolo (n. 5) basato su nuovi dati empirici – una serie di interviste, che costituiscono il nucleo più ovvio di un potenziale articolo per una rivista peer-reviewed. Il capitolo 4 potrebbe probabilmente essere esteso fino a costituire il nucleo di un ulteriore articolo, che potrebbe proporre un'analisi inedita della congiuntura e degli sviluppi che hanno preparato la scena del progetto Technopole. Ma un po" più di nuovi dati originali avrebbero reso questa dissertazione più solida.

I risultati dovrebbero anche essere collegati alla teoria e alla letteratura in modo più approfondito. Questo aiuterebbe a chiarire quale sia il contributo alla letteratura che la tesi offre, al di là del contributo empirico che l'aggiunta di questo nuovo caso di studio già offre.

Inoltre, il capitolo sulla metodologia (n. 3) dovrebbe riferirsi maggiormente alle specificità del progetto di ricerca. Questo rafforzerebbe ulteriormente la coerenza della tesi.

Ripensando alla tesi, ora, e ricordando la visita di Tommaso, è chiaro che abbiamo perso uno studioso promettente, oltre che un compagno e un essere umano caloroso e generoso.

Appendice: elenco dei prodotti di ricerca di Tommaso Fasciani (2020-2024)

- Fasciani T. (2024). *Il potere politico e il concetto di egemonia*. In d'Albergo, Moini (eds.) *Sociologia della politica contemporanea*, Carocci editore.
- Fasciani T. (2024). *I movimenti sociali della contemporaneità*. In d'Albergo, Moini (eds.) *Sociologia della politica contemporanea*, Carocci editore.
- Fasciani T. et al. (2023). *La governance dell'Intelligenza Artificiale nelle politiche locali: trade-off e potere nel caso della videosorveglianza a Torino*. In Rivista trimestrale di scienza dell'amministrazione, 4, pp. 1-26.
- Fasciani T. (2023). *For a Sociological Account of Urban Science and Technology Policies: Understanding Cultural, Economic and Political Determinants*, Working paper series – Dipartimento di Scienze Sociali ed Economiche Sapienza, n. 14/2023.
- Fasciani T. (et al.) (2022). *Governance e metagovernance delle economie urbane: Roma e Milano di fronte alla crisi pandemica*. In Urban@it – Centro nazionale di studi sulle politiche urbane, Settimo Rapporto sulle città. Chi possiede la città? *Proprietà, poteri, politiche*. Il Mulino.
- Fasciani T. (et al.) (2022). *La governance urbana transnazionale di fronte alla crisi Covid-19: il caso dell'International Urban Cooperation Programme dell'Unione europea*, in Moini G., Millefiorini A. (a cura di) Covid, azione pubblica e crisi della contemporaneità. Primato o declino della politica?, Sapienza Università Editrice.
- Fasciani T. (2021). *Agende e politiche urbane per l'economia: ecosistemi dell'innovazione a Roma e Milano*, Una geografia delle politiche urbane tra possesso e governo. Sfide e opportunità nella transizione, Working Papers Urban@it, a cura di Perrone C., Masiani B., Tosi F., pp. 334-342.

- Fasciani T. (et al.) (2020). I*stituzioni e crisi COVID-19 in Italia: agende e (de)politicizzazione nella governance dell'Intelligenza Artificiale*, Rivista Trimestrale di Scienza dell'amministrazione, 2, pp. 1-25.

Partecipazione a convegni e seminari

- 2023: Convegno AIS – sezione di sociologia politica, Università della Calabria. Paper presentato: "Poteri pubblici e nuove agende politiche urbane: un approccio per l'analisi di continuità e riconfigurazioni nella political economy di Roma", 8-9 giugno.
- 2023: V Riunione Scientifica del Dipartimento di Scienze Sociali ed Economiche, Università Sapienza. Paper presentato: "Una prospettiva sociologica sul Rome Technopole: i fattori economici, politici e culturali dell'innovazione urbana", 29-31 maggio.
- 2023: Convegno AIS, Università Federico II. Paper presentato: "Poteri sociali e governance dell'intelligenza artificiale nelle politiche della sicurezza urbana: la videosorveglianza a Torino", 18-21 gennaio.
- 2022: Midterm Conference ESA, RN32 – Political Sociology, Università di Losanna. Paper presentato: "The urban governance of AI: policies and practices of Italian municipalities", 10-12 novembre.
- 2022: Riunione scientifica del Dipartimento di Scienze Sociali ed Economiche, Università Sapienza. Paper presentato: "Governance, metagovernance e PNRR a Roma: spunti per l'analisi e prime evidenze", 24-25 maggio.
- 2022: Convegno della facoltà di Scienze Politiche, Sociologia, Comunicazione, Università Sapienza. Paper presentato: "Ecosistemi dell'innovazione a Roma: azione e forme di interazione", 26-27 gennaio.

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This is a special book, presenting Dr Tommaso Fasciani's doctoral thesis (PhD School in *Social Sciences and Economics at Sapienza, Sociology and Applied Social Research* curriculum). Tommaso didn't have time to complete his program, as a tragic road accident took his life at the age of just 32. The book contains Tommaso's thesis at the first stage of elaboration, short presentations of his biography and the evaluations of the thesis. The publication of such a promising but incomplete scientific work is dedicated to him and to all those who knew, loved, and remember him with sorrow. It is also intended for PhD students, as the material collected bears witness to the research process in the social sciences and the stages that enrich academic training after graduation.

Tommaso Fasciani (L'Aquila 1992-2024) studied at Sapienza University of Rome, where he graduated in Sociology. He was enrolled in the PhD Program in Social and Economic Sciences – "Sociology and Applied Social Research" curriculum, and was due to defend his dissertation titled *The Rome Technopole as a Local Innovation Ecosystem: A Cultural Political Economy Approach*.

Ernesto d'Albergo (Rome 1958) is a full professor at Sapienza University of Rome. He teaches Political Sociology and Policies for Sustainable Urban Development.

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