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RESCALING CITY PROPERTY

Amnon Lehavi*

INTRODUCTION

The city of Venice, Italy, is taking unprecedented measures in its efforts to address the flow of tourists coming into the city. While the number of permanent residents in the city's historic center is steadily declining—with less than 50,000 persons as of the end of 2022, down more than 120,000 residents from the 1950s—the city has been grappling with millions of visitors each year.¹ One key measure, which was anticipated to take effect in January 2023, is charging visitors for access and setting entrance quotas.² Under the scheme, locals, relatives of residents, and tourists who book accommodations in a Venice hotel are exempt from the fee.³ This means that the entrance quotas and the fees—which are to be set between three and ten Euros depending on the season and how many tourists are expected on that day—are placed mostly on the masses of day-trippers, who are said to have crowded out local residents while causing various types of environmental costs and changing the city's ambiance.⁴

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1. See Angela Giuffrida, *Venetians Fear 'Museum Relic' Status as Population Drops Below 50,000*, GUARDIAN (Aug. 10, 2022, 9:16 AM), [<https://perma.cc/QQ82-7NLT>]; Anna Momigliano, *Venice Tourism May Never Be the Same. It Could Be Better.*, N.Y. TIMES (Oct. 4, 2021), [<https://perma.cc/ZJ6X-P6GU>].

2. See Emma Featherstone, *Venice's New Tourist Rules Explained: How the Entry Fee of Up to €10 Will Be Charged and Who Will Be Exempt*, iNews (July 4, 2022, 4:50 PM), [<https://perma.cc/C2LW-ELRA>]; Alessandro Speciale, *Venice Set to Charge Tourists for Entry from Next Summer*, BLOOMBERG (Aug. 21, 2021, 3:50 AM), [<https://perma.cc/YKE8-U2KF>].

3. See Rebecca Ann Hughes, *Venice Sets Date for Introduction of Ticketing and Entry Fees - Here's What You Need to Know*, EURONEWS (Apr. 7, 2022), [<https://perma.cc/SW55-CXEC>].

4. Speciale, *supra* note 2. Another measure introduced in 2021 banned large cruise ships from the Venice lagoon in an effort to both prevent damaging waves in the sinking city and limit the actual number of day-trippers. See *id.*; Emma Bubola, *Venice, Overwhelmed*

Going beyond such physical gatekeeping, which is intended to both prevent over-crowding in the city and make visitors internalize at least some of the marginal costs they place on the city's decaying infrastructure, the city of Venice is increasingly using digital technology to monitor the movement of visitors within the city. Alongside surveillance cameras—which were originally installed to monitor for crime and reckless boaters, but now also serve the purpose of spotting over-crowding—the city is collecting cellphone data following a deal struck with TIM, an Italian phone company.⁵ Such information allows the city not only to track movement patterns of cellphone users but also to distinguish between different types of crowds: namely, residents and persons who stay overnight at city hotels versus day-trippers who stay only for a few hours.⁶ Answering concerns voiced about invasion of privacy and lack of consent by those monitored, the city argues that the information is anonymized and aggregated and that it serves as an essential planning tool not only to control over-crowding but also to promote a policy that encourages visitors to stay overnight at city hotels and, more broadly, serves its permanent residents—while others have proposed what they consider to be less invasive means of promoting this policy, such as seeking to attract highly educated and creative professionals to the city.⁷

Venice may be an outlier in its irregular proportions between the numbers of residents and visitors or in the types of environmental concerns it deals with due to subsidence and rising waters, but many of the challenges it addresses typify many other cities across the world. In particular, such challenges attest to the shifting borders of physical and digital urban governance—and to the fact that cities often lack the tools and powers to deal with their highly dynamic current reality.

This Article seeks to identify the growing tension between the contemporary physical and digital reality of cities across the world and the formal, often archaic, body of norms that governs

by *Tourists, Tries Tracking Them*, N.Y. TIMES (Oct. 4, 2021), [<https://perma.cc/34VA-2H7N>].

5. Bubola, *supra* note 4.

6. *See id.*

7. *Id.*

city powers and duties vis-à-vis different types of persons and corporations: locals, non-local residents of the same nation-state, and foreigners. The nation-state's continuing dominance, both in the domestic division of power across various legal systems and in the international arena, often results in a systemic mismatch between formal governance tools and urban practices.⁸ Although there is a growing body of literature that illuminates cities' governance deficit—including in their legal relations vis-à-vis upper-level governments in monist or federal nation-states,⁹ the lack of a constitutional status in most legal systems,¹⁰ and their traditional absence from international law¹¹—a formal “governance overhaul” for cities along these various dimensions is not yet in the making.

The Article argues that many aspects of the governance mismatch embedded in the cross-border nature of urban life can be addressed through a reconsideration of the role of cities' property rights in assets, both tangible and intangible ones.¹² Cities face growing pressure on physical assets that are consumed by both residents and non-residents, often with little power to ensure that those who use such assets will internalize the costs involved.¹³ This may call for reconsidering the tenets of cities' property rights in governing these types of assets. At the same time, cities—especially “smart cities”—are increasingly accruing a new type of valuable asset: aggregated data about everyday actions of residents and non-residents, such as their movement patterns across the city.¹⁴ While cities must account for concerns

8. See discussion *infra* Section I.A.

9. See, e.g., RICHARD SCHRAGGER, CITY POWER: URBAN GOVERNANCE IN A DIGITAL AGE 1-17 (2016) (arguing that cities in the United States should be given more formal power to govern because cities should work to promote not only economic growth but also other policies such as social welfare and other forms of equality).

10. See RAN HIRSCHL, CITY, STATE: CONSTITUTIONALISM AND THE MEGACITY 11-12 (2020) (highlighting “the bewildering silence of contemporary constitutional discourse with respect to cities and urbanization”).

11. Helmut Philipp Aust & Janne E. Nijman, *The Emerging Roles of Cities in International Law - Introductory Remarks on Practice, Scholarship and the Handbook*, in RESEARCH HANDBOOK ON INTERNATIONAL LAW AND CITIES 1, 1-11 (Helmut Philipp Aust et al. eds., 2021) (“For most of the twentieth- as well as early-twenty-first-century international law scholarship, it is apt to speak of an ‘invisibility’ of cities.”).

12. See *infra* Sections II, III.

13. See *infra* Section II.B.

14. See *infra* Section II.C.

about privacy, mostly by ensuring that data is anonymized, or about any other potential abuse of cities' formal power or practical ability to collect information, it may make sense to allow cities to make use of such data, and even monetize it, under certain constraints.

The normative case for allowing cities to exert their property rights in assets in a differential and creative manner to address effectively their cross-border reality is particularly strong when cities remain otherwise committed to promoting intra-local and inter-local openness, diversity, and tolerance. Much of the concern about parochialism derives from the exclusionary practices of suburbs or private communities. Cities are—and should be—different. The multiple dimensions of cross-border activities taking place in cities today attest to their key role as a forum for inter-local and international mobility, exchange, and heterogeneity. Any normative or doctrinal reconsideration of city legal powers must preserve these essential traits. Allowing cities to harness their property rights, while otherwise preserving their general cross-border openness, may aid them in addressing their mounting physical and digital challenges.

This Article proceeds as follows. Part I seeks to identify the “urban governance gap.” This term stands for the growing disparity between the traditional mandate of cities and other types of local governments to govern “local” matters that relate mostly to those who reside within their territorial boundaries and the current reality of cities, which requires them to address not only thematic issues that have been traditionally conceived as a “national” matter, such as human rights,¹⁵ but also a growing scope of activities that concern non-resident persons and corporations.¹⁶ It shows that while cross-border activities in cities have been mostly associated with “global cities”—referring to cities that serve as a hub of transnational commercial or financial activity—or with “international cities” that are the object of international tourism or other types of cross-border interest (due

15. See Martha F. Davis, *Finding International Law 'Close to Home': The Case of Human Rights Cities*, in RESEARCH HANDBOOK ON INTERNATIONAL LAW AND CITIES, *supra* note 11, at 227, 227-37 (showing how various cities embrace human rights norms as a guiding framework for local governance).

16. See *infra* Section I.C.

to historical, cultural, or geopolitical reasons), many more cities around the world are currently facing challenges that transcend local and even national boundaries.¹⁷ Part I then briefly surveys some doctrines that have been developed in different legal systems for defining the scope of legal rights and duties of cities in handling such challenges, including in examining under which circumstances a city may favor its residents over outsiders in granting access to assets or in charging fees for using them.¹⁸ It argues that piecemeal rules that have been adopted in the matter are often archaic and do not capture the essence of contemporary cross-border urbanism—one that deals not only with physical aspects but also with digital or “smart” governance of city life.¹⁹

Part II suggests that at least some of the dilemmas that concern the ability of cities to function well in a physical and digital cross-border reality may be resolved through a reconsideration of the role of cities’ property rights in tangible and intangible assets. Contemporary legal systems have generally moved away from medieval and early modern conceptions of cities as “associations” or collective entities based on corporate charters, adopting a public/private distinction by which local governments are “public corporations” that “exist for public political purposes only . . . although they involve some private interests.”²⁰ This does not mean, however, that property rights that cities have in assets do not matter. The acquisition or creation of assets by cities is instrumental in allowing them to perform many of their functions and can be distinguished—although not hermetically—from the power of governance or regulation that cities have over privately owned assets located in their territory.²¹ Accordingly, the design of property law for city-owned assets must address the growing pressure on physical city assets, such as streets, parks, or cultural institutions. At the same time, it should conceptualize the proprietary features of a new

17. See *infra* Section I.A.

18. See *infra* Section I.B.

19. See *infra* Section I.C.

20. This distinction was adopted by the U.S. Supreme Court in *Trustees of Dartmouth College v. Woodward*, 17 U.S. 518, 668-69 (1819) (Story, J., concurring); see also *infra* notes 113-14 and accompanying text.

21. See *infra* notes 127-34 and accompanying text.

type of asset that many cities, and particularly “smart cities,” are increasingly accruing and processing: mass digital data.

Part III sets out the normative framework for identifying the rights and duties that should be attached to city-owned assets. It argues that cities should generally promote openness, diversity, and tolerance.²² In contrast to suburbs or private communities—and especially “gated communities”²³—the case for validating cities’ property rights is particularly strong when cities serve as a forum for inter-local and international mobility, exchange, and heterogeneity and when property entitlements are harnessed as a mechanism that enables the internalization of costs and benefits of serving different crowds.²⁴ If this is done properly, property law can solve many of the everyday challenges that cities face, ones that cannot—or should not—be resolved by a political overhaul of the city/state allocation of power.²⁵ Any reconsideration of the role of property law in the context of city assets must address the unique position of cities in identifying the scope of *in rem rights* and *in rem duties* regarding such assets and how these may apply to different categories of persons: locals, non-local nationals, and foreigners. Once property theory is employed to handle the current mismatch between governance powers and the cross-border physical and digital reality of cities, we can delineate the legal boundaries that would determine under which circumstances cities may take a differential approach in exercising the different “sticks” in the bundle of property.

I. IDENTIFYING THE URBAN GOVERNANCE GAP

A. Global Cities, International Cities, Megacities, and Other Cities

We live in an increasingly urbanizing world. While at the beginning of the twentieth century, only 12% of persons lived in

22. See *infra* Section III.A.

23. See, e.g., Rowland Atkinson & Sarah Blandy, *International Perspectives on the new Enclavism and the Rise of Gated Communities*, in *GATED COMMUNITIES: INTERNATIONAL PERSPECTIVES*, at vii, vii-xi (Rowland Atkinson & Sarah Blandy eds., 2006).

24. See *infra* Section III.B.

25. See *infra* note 205-08 and accompanying text.

cities, today most of the world's population resides in them, and the pace of urbanization is steadily increasing.²⁶ In 2018, 55% of the global population lived in cities, and this number is expected to rise to 68% by 2050.²⁷ This increase is even more staggering considering the overall growth in the world's population—for example, within a single generation between the mid-1990s and late-2010s, the number of city dwellers nearly doubled to 4.3 billion, and this number is expected to increase to 6.7 billion by the year 2050.²⁸ Accordingly, while the world map is still formally divided into nation-states in the aftermath of the 1648 Peace of Westphalia, in today's world, most significant activities take place in cities.²⁹ They are the center of the world economy, responsible for 80% of global gross domestic product (GDP)—accounting for most knowledge production, data collection, and tech innovation but also for most pollution.³⁰ Cities are also the meeting place for cultural exchanges and many other interpersonal activities.³¹

Cities were never disconnected from their immediate and outer surroundings—although over the course of history, we can identify a significant growth in the qualitative and quantitative dimensions of cross-border activities that typify cities. This process is more dominant nowadays than ever before due to a variety of economic, social, geopolitical, and technological reasons.³²

With their revival around the eleventh century, European cities and towns sought to establish a substantial degree of

26. Julia Zinkina et al., *The Nineteenth-Century Urbanization Transition in the First World*, in GLOBALISTICS AND GLOBALIZATION STUDIES 164, 166 (Leonid E. Grinin et al. eds., 2017); ORG. FOR ECON. COOP. & DEV., THE METROPOLITAN CENTURY: UNDERSTANDING URBANISATION AND ITS CONSEQUENCES 1 (2015), [<https://perma.cc/4S7Q-BDN5>] (summarizing the full publication, *The Metropolitan Century: Understanding Urbanisation and Its Consequences*).

27. See *Urban Development*, THE WORLD BANK, [<https://perma.cc/FN5W-UME3>] (last visited Jan. 2, 2023); Dept. of Econ. & Soc. Affs., World Urbanization Prospects 2018, U.N. Doc. ST/ESA/SER.A/421, at 5 (2019), [<https://perma.cc/JB86-MUHZ>].

28. HIRSCHL, *supra* note 10, at 2.

29. See RAFFAELE MARCHETTI, CITY DIPLOMACY: FROM CITY-STATES TO GLOBAL CITIES 1-2 (2021).

30. *Id.* at 2.

31. *Id.*

32. See Saskia Sassen, *The Global City: Introducing a Concept*, BROWN J. WORLD AFFS., Spring 2005, at 27, 27.

autonomy.³³ However, it was not the autonomy of a political institution, such as in contemporary systems of government, but that of a “complex economic, political, and communal association.”³⁴ The medieval city or town was essentially a group of people, most dominantly merchants, who sought protection against outsiders to promote the interests of the group as a whole.³⁵ The autonomy of the group and its ability to establish its own rules were recognized in the legal status of the town, whether by a city charter or other arrangements made with the rulers of the larger territory in which the city was located.³⁶ While English towns had less autonomy vis-à-vis the king and his lords, in other places, such as Flanders or today’s Italy and Germany, this autonomy allowed cities or towns to govern their own matters.³⁷

Accordingly, each medieval city was governed according to its specific urban laws, which were usually granted to it as a privilege by the territorial king or lord who confirmed its foundation and awarded the urban community the right to modify or complement the communal statutes—although this power to change rules was at times subjected to limits placed by the king or lord.³⁸ Because each such city charter or equivalent instrument was granted to cities on an individual basis, along with the power to amend such rules over time, urban legal regimes were often very different from one another, which in turn required cities to engage in some type of coordination, especially to promote trade between cities.³⁹ One prominent example is the late Middle Ages’ network of trade relations and political alliances between the cities of Northern Germany, known as the Hanse.⁴⁰

33. See GERALD E. FRUG, *CITY MAKING: BUILDING COMMUNITIES WITHOUT BUILDING WALLS* 27 (1999).

34. *Id.*

35. *See id.* at 27-28.

36. *See id.*

37. Charles Angelucci et al., *How Merchant Towns Shaped Parliaments: From the Norman Conquest of England to the Great Reform Act*, 112 *AM. ECON. REV.* 3441, 3476-78 (2022).

38. Tobias Boestad, *Legitimizing Interurban Cooperation in the Middle Ages: The Legal System of the Hanse*, in *RESEARCH HANDBOOK ON INTERNATIONAL LAW AND CITIES*, *supra* note 11, at 29, 30.

39. *See id.* at 30-36.

40. *Id.* at 33-36.

Therefore, even during the high days of autonomous cities, including Italian city republics—such as Florence, Milan, and Venice—cities have always engaged in complex political, economic, and legal relations with neighboring or outer-area cities.⁴¹

More broadly, as Martin Loughlin notes, regardless of the formal level of self-governing powers that a certain city has attained vis-à-vis upper-level rulers at a certain point in time, the city “always existed in an integral relation to its surrounding area” such that it was never truly a “self-sufficient organism.”⁴² “In modernity, the city as a discrete unit of government” is practically overwhelmed—again, regardless of the specific formal allocation of power within a nation-state—by massive processes of urbanization that transformed the entire society, such that current urban society can be viewed as a “series of intersecting center-periphery networks.”⁴³ This is particularly the case given the growth of “megacities” around the world and the “extensive urban agglomeration and population growth” in such cities.⁴⁴ The remarkable feature of contemporary megacities is not only the size of their population but also the concentration of people in them in proportion to the overall population of the country in which they are located—for example, the Santiago de Chile and the Taiwan-Keelung metropolitan areas are home to over one-third of their respective nations’ overall populations.⁴⁵ Cities are also the hub of economic, cultural, and social life in nation-states, which means that beyond their residents, cities—and megacities in particular—engage daily with masses of out-of-city workers and visitors, such that cross-border action is ever-present in these cities. Accordingly, the geographical parameters of daily out-of-city commutes are ever-expanding, with major cities around the world seeing an increased number of “supercommuters”—people

41. See Susanne Lepsius, *The Legal System Among Italian City Republics*, in RESEARCH HANDBOOK ON INTERNATIONAL LAW AND CITIES, *supra* note 11, at 41, 44-50.

42. See Martin Loughlin, *The City in the Constitutional Imagination*, 72 UNIV. TORONTO L.J. 356, 359 (2022) (reviewing HIRSCHL, *supra* note 10).

43. *Id.* at 360.

44. HIRSCHL, *supra* note 10, at 7; see also Loughlin, *supra* note 42, at 356, 360.

45. HIRSCHL, *supra* note 10, at 6-7. There is no single definition for the term “megacity,” with some sources placing the benchmark at five million residents, and others at ten million. See *id.*

who spend ninety minutes or more each way in their daily trek from outer-area jurisdictions into the city.⁴⁶

The cross-border reality of cities exceedingly goes beyond national boundaries. Here, too, while some cities, such as Athens, Rome, and Alexandria, were a locus of political, economic, and cultural cross-border activity in ancient times,⁴⁷ in contemporary cities, this cross-border reality is typical of numerous cities, albeit to varying degrees. Saskia Sassen differentiates between “international cities,”—such as Venice and Florence, which are sources of cross-border interest and, accordingly, sites of international tourism due to their historical, cultural, or leisure-time importance—and “global cities” (or the similar concept of “world cities”).⁴⁸

According to Sassen, the term “global cities” refers to “strategic sites for the management of the global economy and the production of the most advanced services and financial operations that have become key inputs for that work of managing global economic operations.”⁴⁹ Different from a world economy that was dominated by trade in goods, in a global economy currently dominated by international investment and financial instruments, the “[o]rganizing and servicing work once carried out by governments has since shifted” to global markets and specialized service firms (such as legal, accounting, finance, and insurance

46. Danielle Furfaro & Tamar Lapin, *NYC Has More than 600K ‘Supercommuters’*, N.Y. POST (Apr. 25, 2018, 9:46 PM), [<https://perma.cc/FV87-FB6H>] (reporting that, in 2018, New York City had the highest overall number of such supercommuters, who constituted 6.7% of the city’s overall workforce—the fourth highest rate in the country).

47. See GREG CLARK, *GLOBAL CITIES: A SHORT HISTORY* 38-39 (2016) (describing the role of global cities in the various continents in pre-modern times); see also LEWIS MUMFORD, *THE CITY IN HISTORY: ITS ORIGINS, ITS TRANSFORMATIONS, AND ITS PROSPECTS* 95 (1st ed. 1961).

48. See SASKIA SASSEN, *THE GLOBAL CITY: NEW YORK, LONDON, TOKYO* 350-51 (2d ed. 2001). For the use of the term “world cities,” see John Friedmann & Goetz Wolff, *World City Formation: An Agenda for Research and Action*, 6 INT’L J. URB. & REG’L RSCH. 309, 310-11 (1982). As for international cities being sites of international tourism, it may be noted that in 2019, just prior to the COVID pandemic, the world’s most visited city, Bangkok, Thailand (with 22.78 million visitors), was not considered a financial/economic “global city.” See Alison Millington, *The 19 Most Visited Cities Around the World in 2019*, BUS. INSIDER (Sept. 5, 2019, 9:16 AM), [<https://perma.cc/5UFM-GWBT>]; Vsupsai, *Is Bangkok Ready to Become a ‘Global City’ Yet?*, ASIAN CITIES (Jan. 30, 2017), [<https://perma.cc/7JV8-WKE4>].

49. See SASKIA SASSEN, *CITIES IN A WORLD ECONOMY* 32 (5th ed. 2019).

firms).⁵⁰ Moreover, a growing number of corporate headquarters' functions are now being outsourced to such specialized corporate service firms.⁵¹ This means that "today the production of headquarter functions of global firms has two sites: one is the corporate headquarters proper, and the other is the specialized service sector [that is] disproportionately concentrated in major cities."⁵² These cities thus have an important physical component: they are the locus of both higher-end and lower-end jobs for such corporate service firms as well as for other types of businesses that indirectly serve these specialized firms.

This means that the current economy is not entirely fluid and a-local but rather that place and place-ness still matter and that the territorial dispersal of economic activity at the national and world levels generated by globalization creates "new forms of territorial centralization."⁵³ Global cities thus address the prospects but also the challenges of running a place that must provide a proper physical and digital infrastructure while serving diverse crowds beyond their residents.

Importantly, this urban reality is no longer the province of a small number of "established global cities," such as New York, London, Paris, or Tokyo.⁵⁴ Alongside them, commentators have identified at least two other categories. The first category is "emerging global cities," referring to capital cities and other big cities in large- or medium-sized emerging economies.⁵⁵ These cities function as the business capitals of their domestic economies and at the same time serve as gateways for international firms, trade, and investment.⁵⁶ The traded specialization of these emerging cities, and accordingly the pace at which they are developing as genuinely global hubs, are highly differential. Cities such as Shanghai, Shenzhen, and Taipei specialize in financial services and are becoming prominent global actors.⁵⁷ Other cities, especially in East Asia, depend

50. *Id.* at 32.

51. *Id.*

52. *Id.* at 32-33.

53. *Id.* at 33-35.

54. See CLARK, *supra* note 47, at 119-22.

55. *Id.* at 122.

56. *Id.*

57. *Id.* at 122-23.

heavily on their hardware and engineering capacities, while still others, such as São Paulo or Moscow, serve as regional centers of asset management, real estate, and research and development.⁵⁸ Then there are cities such as Mumbai, Manila, Jakarta, and Dhaka, which have global-city aspirations but are still low-wage economies and face acute infrastructure challenges.⁵⁹

The second category is that of “new global cities”—which include “smaller, more specialized but highly globally oriented cities” with strong infrastructure and a high quality of life.⁶⁰ Melbourne and Boston are considered as quintessential examples.⁶¹ Some “new global cities,” such as Brisbane, Vienna, Munich, and Tel Aviv, increasingly excel in high-tech or innovation, while others are becoming globally competitive in sectors such as art and entertainment.⁶²

But for all types of cities, processes of agglomeration, digitalization, and globalization should not be confused with fluidity, complete mobility, and a-localism. Various types of global cities, international cities, or national- or metropolitan-level urban hubs remain physical spaces that must provide assets and services, and the full scope of city life, while engaging in cross-border action.

B. Legal Boundaries of Governance vis-à-vis Non-Residents

Many cities around the world engage in daily activities that affect not only residents but also large and diverse groups of “outsiders”: out-of-city or foreign workers, day-commuters, visitors, and, more generally, persons located in other nodes of global networks of which the city is part.

This reality brings forward numerous issues about the power of governance that a city has over non-residents and, particularly, under which circumstances a city can engage in a differential policy toward residents vis-à-vis some or all other groups of affected parties. This Article points to a growing mismatch

58. *Id.* at 123.

59. CLARK, *supra* note 47, at 123-24; *see also* MARCHETTI, *supra* note 29, at 29-30.

60. CLARK, *supra* note 47, at 126.

61. MARCHETTI, *supra* note 29, at 30.

62. CLARK, *supra* note 47, at 126-27; MARCHETTI, *supra* note 29, at 30.

between the everyday physical and digital reality of cities and much of established doctrine across many legal systems.⁶³ While this Article obviously cannot cover all major legal dilemmas that pertain to the scope of authority that local governments have toward such different groups, or otherwise offer an exhaustive comparative-law overview, the key point made here is that current doctrine is often captured by a paradigm that focuses almost solely on the city's residents as the subjects of legal norms (which I term a "resident-focused paradigm") while overlooking many other dimensions of urban cross-border reality.⁶⁴ Accordingly, when political decision-makers and courts deal with specific issues that come up in the context of non-residents, they often stick to principles that were developed under this resident-focused paradigm.⁶⁵

In addition, cross-border issues relating to city governance are also regularly viewed through conventional accounts of the division of power between different types of governments—whether between cities and upper-level governments or between neighboring cities.⁶⁶ In the context of city versus upper-level governments, such disputes often relate to the subject matters that a city can decide on when such issues do not fall within a conventional "local" ambit. In the United States, such disputes are often channeled via the concept of "home rule," i.e., whether cities hold a general power to govern within their borders beyond specific types of responsibilities that have been delegated to them by upper-level governments.⁶⁷ This type of discourse also governs disputes that essentially relate to cities' legal powers regarding certain types of non-residents, as was the case with the political and legal clash between "sanctuary cities" and the Trump

63. See discussion *infra* Section I.C.

64. See discussion *supra* Section I.A.

65. See *infra* notes 72-85 and accompanying text.

66. For an analysis of potential frictions between neighboring local governments in the context of land-use decisions that create externalities across local borders, see Amnon Lehavi, *Intergovernmental Liability Rules*, 92 VA. L. REV. 929, 963-64, 967 (2006), which suggests that adversely affected local governments should be granted a right to monetary compensation for certain decisions.

67. For an analysis of the "home rule" concept (and competing approaches) in the United States and a call to grant cities more governance power to address current challenges, see Richard Briffault et al., *Principles of Home Rule for the 21st Century* 10-17 (Va. Pub. L. & Legal Theory Rsch. Paper No. 2020-16, 2020), [<https://perma.cc/P2DV-9XXB>].

administration.⁶⁸ But here too, the discourse often disregards the respective rights of persons that live across borders.

In this Section, I exemplify briefly how current legal line-drawing about the governance power of cities regarding residents, as opposed to some or all non-residents, relies essentially on a “resident-focused paradigm” and that it may fail to address the cross-border reality that many cities face today. Moreover, in considering current doctrine, it is important to bear in mind that designing a timely and inclusive legal policy that applies to non-residents is particularly important because this aspect of city power cannot be otherwise disciplined by the regular political process. When a city takes a certain decision that applies to its residents, the latter can react to such a decision by exercising their voice through elections or by other political tools available to them as residents.⁶⁹ This does not apply, certainly not on the same scope, to large and diverse groups of non-residents who may have little or no collective clout with local decision-makers or an upper-level government.⁷⁰ At the same time, adhering to the “resident-focused paradigm” may also work to unduly limit cities from ensuring that different categories of non-residents, who take

68. See Ronald Brownstein, *Trump’s Battle with Sanctuary Cities Is the Next Phase of His Confrontation with Urban America*, CNN: POLS. (Apr. 16, 2019, 1:20 AM), [<https://perma.cc/GBQ7-BSJD>]. The term “sanctuary cities” refers in this context to U.S. local jurisdictions that were reluctant to embrace and implement federal immigration enforcement actions advanced by the Trump administration. *Id.* According to some commentators, this clash was part of a broader political agenda by the Trump administration to promote rural areas at the expense of cities. *See id.*

69. It is a different question whether the local political process is actually successful in holding cities accountable for such actions. Consider, for example, the longstanding debate in the context of land-use decisions whether majoritarian or minoritarian biases are likely to dominate local land use decisions or if the different political interests would be well represented by “voice” and “exit” mechanisms. For a more skeptical approach, see, for example, Robert C. Ellickson, *Suburban Growth Controls: An Economic and Legal Analysis*, 86 YALE L.J. 385, 404-10 (1977); see also Einer R. Elhauge, *Does Interest Group Theory Justify More Intrusive Judicial Review?*, 101 YALE L.J. 31, 39 (1991), for a discussion of the disproportionate impact of certain interest groups. For a more favorable approach, see Carol M. Rose, *Takings, Federalism, Norms*, 105 YALE L.J. 1121, 1131-35 (1996) (reviewing WILLIAM A. FISCHER, *REGULATORY TAKINGS: LAW, ECONOMICS, AND POLITICS* (1995)) (criticizing process theory’s “localism bashing” and arguing that “exit and voice options constrain local government” decisions).

70. Lehavi, *supra* note 66, at 941-942; *cf.* WILLIAM A. FISCHER, *THE HOMEVOTER HYPOTHESIS* 184-86, 205-06 (2001) (arguing that inter-local externalities in such decisions are smaller in scope than inter-regional or inter-state ones).

part in city life, internalize at least some of the costs and benefits that their actions generate for the city.

To illustrate the currently lacking doctrine on city power vis-à-vis non-residents, this Section looks briefly at U.S. case law regarding a city's ability to favor its residents over outsiders. It does so in the context of access to city-owned property—by showing that instead of developing an updated jurisprudence on the normative features of proprietary rights and duties in a cross-border reality, this case law relies on often archaic concepts based on a “resident-focused paradigm.”⁷¹

In its decision in *County Board of Arlington County v. Richards*, the U.S. Supreme Court held that a local ordinance that limited parking in a residential area to local residents did not violate the Equal Protection Clause of the Fourteenth Amendment.⁷² Referring to the county's stated policy goals of reducing “air pollution and other environmental effects of automobile commuting” and of ensuring convenient parking for “residents who leave their cars at home during the day,” the Court reasoned that “[t]he Constitution does not outlaw these social and environmental objectives, nor does it presume distinctions between residents and nonresidents of a local neighborhood to be invidious. The Equal Protection Clause requires only that the distinction drawn by an ordinance like Arlington's rationally promote the regulation's objectives.”⁷³ Later decisions reviewing the legality of differentiating between residents and non-residents for purposes of street parking based on state constitutional equal-protection clauses or the common law “public trust doctrine”⁷⁴ have generally validated such measures.⁷⁵ New York's Court of Appeals adopted a different approach, however, by holding that “residents of a community have no greater right to use the highways abutting their land—whether it be for travel or parking—than other members of the public,” and it is for the state

71. See *infra* notes 71-84 and accompanying text.

72. 434 U.S. 5, 6-7 (1977) (per curiam).

73. *Id.* at 7.

74. For a discussion of the public trust doctrine, see *infra* text accompanying notes 223-27.

75. See, e.g., *Martell's Tiki Bar, Inc. v. Governing Body of Borough of Point Pleasant Beach*, No. 13-5676, 2015 WL 132559, at *1, *8-9 (D.N.J. Jan. 9, 2015) (discussing decisions which upheld the distinction based on New Jersey's constitution and common law).

legislature to create an exception or delegate the power to localities to do so.⁷⁶ Thus, in the context of parking privileges, it seems that federal courts and most state courts focus on whether the marginal effects of into-the-city commutes justify placing some of these costs on commuters—adopting an approach that I consider pragmatic and connected to cross-border reality.

However, for other types of city assets, courts have taken a different approach, which moves away from a pragmatic approach that looks to the cross-border reality of cities and relies instead on legal categories that were developed essentially under the “resident-focused paradigm.” Thus, in *Leydon v. Town of Greenwich*, the Supreme Court of Connecticut held that a municipality was prohibited from allowing access to municipal parks only to its residents and their guests and that such a restriction placed on non-residents violated the First Amendment to the U.S. Constitution and corresponding provisions in the Connecticut Constitution.⁷⁷ The reason for invalidating this differential policy does not rely, therefore, on considerations of urban justice, resource distribution, or marginal effects of additional users but rather on freedom of speech.⁷⁸ The court resorted to the traditional public forum doctrine—one that distinguishes between “the traditional public forum, the designated public forum, and the nonpublic forum.”⁷⁹ Identifying parks as belonging to the category of “the traditional public forum,” the court reasoned that:

In places which by long tradition or by government fiat have been devoted to assembly and debate, the rights of the State to limit expressive activity are sharply circumscribed. . . . [Such locations include] streets and parks which have immemorially been held in trust for the use of the public and, time out of mind, have been used for purposes of assembly, communicating thoughts between citizens, and discussing public questions.⁸⁰

76. N.Y. State Pub. Emps. Fed'n v. City of Albany, 527 N.E.2d 253, 256 (N.Y. 1988).

77. 777 A.2d 552, 557 (Conn. 2001).

78. See *id.* at 559.

79. *Id.* at 566-67 (citing *United States v. Frandsen*, 212 F.3d 1231, 1237 (11th Cir. 2000)).

80. *Id.* at 567 (citing *Hague v. CIO*, 307 U.S. 496, 515 (1939)) (alteration in original).

Accordingly, the Connecticut court ruled that “the forum-based approach for First Amendment analysis subjects to the highest scrutiny the regulation of speech on government property traditionally available for public expression” and that “[t]he government can exclude a speaker from a traditional public forum only when the exclusion is necessary to serve a compelling state interest and the exclusion is narrowly drawn to achieve that interest.”⁸¹ The court concluded that in this case “the town ha[d] failed to explain why the ordinance’s virtual ban on nonresidents is a reasonable time, place or manner restriction on the use of the park by such nonresidents.”⁸²

Adversely, in *Wright v. Incline Village General Improvement District*, the U.S. Court of Appeals for the Ninth Circuit held that because beaches are not “a traditional public forum,” one that is “devoted to assembly and debate,” the decision of the district to grant access to the beach that it owns and operates only to people who own or rent property within the boundaries of the district did not violate First Amendment rights of non-residents.⁸³ In addition, in reviewing an equal protection claim, the court held that such a limit on access is not “based on the content of speakers’ messages” and does not infringe a fundamental right because “beaches are not a public forum.”⁸⁴

I do not entirely dismiss the possibility that non-residents who use various types of city-owned assets also find them as instruments for public expression and debate. But at the same time, this type of legal distinction, which was largely conceived in the context of a city’s ability to regulate access to and use of city-owned properties mostly vis-à-vis its residents—especially in the context of using public spaces for political or social protest⁸⁵—should not serve as the prominent legal benchmark in

81. *Id.* at 568, 571.

82. *Leydon*, 777 A.2d at 572.

83. 665 F.3d 1128, 1132, 1134 (9th Cir. 2011).

84. *Id.* at 1141.

85. For the history of the public forum doctrine, see, for example, Richard B. Saphire, *Reconsidering the Public Forum Doctrine*, 59 CIN. L. REV. 739, 739-44, 739 n.1 (1991), which suggests that “the doctrine’s formalism provides both its underlying justification and its primary appeal”); Don Mitchell, *Political Violence, Order, and the Legal Construction of Public Space: Power and the Public Forum Doctrine*, 17 Urb. Geography 152, 152-55

drawing the boundaries between residents and non-residents. In the contemporary reality of cities, the various crowds of non-residents who have an interest in accessing tangible or intangible assets owned or controlled by the city are driven by a multitude of purposes that go well beyond their interest in political expression and public debates.

Accordingly, city policy toward various types of groups should reflect this current reality and primarily address matters such as the nature and scope of city agglomeration, the efficiency and equity of intra-city and inter-city allocation of resources, or how different types of users can be made to internalize the costs and benefits of their physical or digital participation in city life. While there is room for normatively considering which types of assets, or mechanisms for access/exclusion or determination of fees/prices, may be particularly prone to overt or covert forms of class-based discrimination or infringement of fundamental rights,⁸⁶ identifying the freedom of expression as the principal normative criterion seems to miss the mark in today's cities. Relying on such a criterion exemplifies the growing disparity between the traditional legal rules on urban governance and the physical and digital cross-border features of contemporary city life.

C. The Digital Mismatch in Cross-Border Urbanism

The discussion in the previous Sections has sought to highlight some of the changing features of many cities across the world—not only “global cities” or “international cities”—in dealing with the everyday mobility of persons in and out of the physical territorial borders of the city and the growing

(1996) (arguing that the development of the doctrine was made in relation to social struggles over and in public space that necessitated legal decision-making).

86. Consider, for example, a recent decision by the Israeli Supreme Court, by which a local council's decision to entirely prohibit access to a city-owned fitness center to non-residents, as opposed to the possibility of setting up a differential scale of fees for residents versus non-residents, should be measured by a multitude of empirical factors, such as the asset's scarcity, existing demand, availability of similar assets in neighboring jurisdictions, and so forth, such that an outright ban may amount to a disproportionate and discriminatory measure. CivA 8956/17 Mansour v. Local Council Kochav Yair Zur Yigal, Nevo Legal Database (Jan. 14, 2021) (Isr.).

implications that this may have for designing legal policy for various groups of persons.⁸⁷ Yet, what has made these cross-border dynamics particularly extensive over the past few decades has been the use of various forms of digital technology and related know-how in operating cities. In turn, this increases the mismatch between the formal scope of a city's governance power and the actual reach of its actions.

While many idioms have been used to portray the use of such digital technology, the term “smart cities” is the most prevalent term used to conceptualize cities that are increasingly composed of what Rob Kitchin has described as:

[P]ervasive and ubiquitous computing and digitally instrumented devices built into the very fabric of urban environments (e.g., fixed and wireless telecom networks, digitally controlled utility services and transport infrastructure, sensor and camera networks, building management systems, and so on) that are used to monitor, manage and regulate city flows and processes, often in real-time, and mobile computing (e.g., smart phones) used by many urban citizens to engage with and navigate the city which themselves produce data about their users (such as location and activity).⁸⁸

The underlying idea behind the use of such technology is that “[c]onnecting up, integrating and analysing” the information produced by various electronic devices and information-collection methods “provides a more cohesive and smart understanding of the city that enhances efficiency and sustainability” and that “rich seams of data . . . can [be] used to better depict, model and predict urban processes and simulate the likely outcomes of future urban development.”⁸⁹ Accordingly, the idea of smart cities is linked to concepts such as “smart people, smart economy, smart governance, smart mobility,” and “smart

87. See discussion *supra* Sections I.A, I.B.

88. Rob Kitchin, *The Real-Time City? Big Data and Smart Urbanism*, 79 GEOJOURNAL 1, 1-2 (2014). Kitchin refers also to another meaning of the term, by which “a smart city is one whose economy and governance is being driven by innovation, creativity and entrepreneurship, enacted by smart people.” *Id.* at 2. Kitchin focuses his attention, however, on the technological meaning of the term—as does most of the other academic literature on smart cities. See *id.* at 1-2.

89. *Id.* at 2.

environment.”⁹⁰ In particular, the concept of “smart governance” is one that “encourag[es] people or citizens to participate and collaborate in smart cities,” and accordingly, “[t]he successful government in smart cities depends on providing city services, channels, smart mobile services, and network integration to the citizens.”⁹¹

Moreover, the scope of digitalization pertaining to assets, services, and actions taking place throughout the city is such that many cities now aspire to set up a “digital twin,” meaning that all physical layers of the city will be complemented by and synchronized with a digital layer.⁹² Further, the city of Seoul announced its plans to enter the metaverse and establish a platform for “contactless communication.”⁹³ By 2023, the city will open its “Metaverse 120 Center,” which will serve as a “virtual city hall” where residents meet (in their avatar forms) with local officials.⁹⁴

What does this new type of digital reality mean for the actual scope of city action and its potential application to various crowds of non-residents—and how disconnected is this new reality from traditional modes of formal territorial governance? I suggest that the mismatch, or the “urban governance gap,” is even more pronounced here than in the case of physical cross-border action. This is so because the actual scope of control and information-gathering in regard to both residents and non-residents is qualitatively and quantitatively different from physical modes of city action.

The most pressing concern with the practices of “smart cities” has to do with the potential ill effects of digital

90. Ayca Kirimtat et al., *Future Trends and Current State of Smart City Concepts: A Survey*, 8 IEEE ACCESS 86448, 86450 (2020).

91. *Id.* at 86451; see also Kai Cao et al., *Big Data, Spatial Optimization, and Planning*, 47 ENV'T & PLAN. B 941, 941-43 (2020).

92. See, e.g., Hui Zeng et al., *Your City Is Mirrored by a Digital Twin - Advanced Version 2.0 of Interactive City: Integrating Physical World and Digital World*, in FUTURE CITIES, NEW ECONOMY, AND SHARED CITY PROSPERITY DRIVEN BY TECHNOLOGICAL INNOVATIONS 46, 46-47 (Lei Guo et al. eds., 2020).

93. Linda Poon, *Navigator: After the Pandemic Comes ... the Metaverse?*, BLOOMBERG (Nov. 13, 2021, 8:40 AM), [<https://perma.cc/BZZ7-TLGS>].

94. *Id.*

surveillance—specifically the infringement of privacy.⁹⁵ While city life has been traditionally defined by at least some level of “public anonymity,”⁹⁶ in smart cities today, literally every step that persons make around the city can be tracked. Beyond identifying general movement patterns, digital data can expose many other personal details, with almost no legal regulation curtailing the city’s ability to collect such information.⁹⁷ Moreover, unlike pieces of information that are genuinely “volunteered” by persons, such as when they participate in online polls or other forms of “crowdsourcing” initiated by the city, or alternatively, when persons are actively aware that personal data is being gathered from them, such as when they are questioned by a police officer, most forms of data collection in the “smart city” are “automated.”⁹⁸ These forms include mobile phones and other devices that record and communicate their location and history of their use, “clickstream data” that records how people navigate through a website or app, transportation “smart cards,” automatic number plate recognition (ANPR), automatic meter reading (AMR) that communicates utility usage without the need for manual reading, and so forth.⁹⁹

While the city’s residents have political means to address concerns over the invasion of privacy—such as by elections, referenda, or other opportunities for exercising “voice”—these measures are practically nonexistent for non-residents, especially for dispersed crowds of work-commuters, visitors, and so forth.¹⁰⁰ Accordingly, scholarly accounts about the prospects and perils of

95. See, e.g., Lilian Edwards, *Privacy, Security and Data Protection in Smart Cities: A Critical EU Law Perspective*, 2 EUR. DATA PROT. L. REV. 28, 28-29 (2016); see also Liesbet van Zoonen, *Privacy Concerns in Smart Cities*, 33 GOV’T INFO. Q. 472, 472-73 (2016).

96. See Christopher Slobogin, *Public Privacy: Camera Surveillance of Public Places and the Right to Anonymity*, 72 MISS. L.J. 213, 214-18 (2002) (calling to protect “the right to public anonymity” from camera surveillance in public places).

97. See JOSHUA A. T. FAIRFIELD, OWNED: PROPERTY, PRIVACY, AND THE NEW DIGITAL SERFDOM 67 (2017) (“Massive public infrastructural surveillance is disturbing and the reach and scale of the technology is new. Legal rules are not in place, and the potential for abuse is significant.”).

98. Kitchin, *supra* note 88, at 4-5 (distinguishing between “directed, automated and volunteered” data).

99. *Id.*

100. See *supra* notes 68-69 and accompanying text.

“citizenship in smart cities” tend to focus on the political community of residents-voters.¹⁰¹

Moreover, as far as non-residents are concerned, not only are such digital devices able to identify pieces of data that are particularly relevant to cities, such as by tracking out-of-city commuting patterns for work and non-work destinations within the city,¹⁰² but also, more generally, such devices can collect data on activities that are taking place outside the territorial borders of the city. Thus, for example, the automatic reading of transportation “smart cards” allows the city to track the entire itinerary of the user, well beyond transit points within the city’s physical borders.¹⁰³ Data aggregation and control, therefore, exceed political boundaries, with no corresponding accountability by the city.

All of this means that the mismatch between the digital scope of city activity and traditional legal rules of territorial governance is especially pronounced. However, as already noted in the Introduction, we are unlikely to see a political reshuffle of governance powers across local borders on the national level, and even more so on the international level, to handle this governance gap.

At the same time, the case of mass digital data in smart cities also exemplifies a potential avenue to rescale city actions without waiting for a local-national-international “governance overhaul.” This is so because many cities are now beginning to consider if and how to monetize the aggregated data—meaning that such cities now look at such data not only as a tool for effective

101. See, e.g., PAOLO CARDULLO, CITIZENS IN THE ‘SMART CITY’: PARTICIPATION, CO-PRODUCTION, GOVERNANCE 58-59 (2021); Martijn de Waal & Marloes Dignum, *The Citizen in the Smart City. How the Smart City Could Transform Citizenship*, 59 INFO. TECH. 263, 265-69 (2017); Sofia Ranchordàs, *Nudging Citizens Through Technology in Smart Cities*, 34 INT’L REV. L. COMPUTS. & TECH. 254, 255 (2019).

102. See, e.g., Roberto Ponce-Lopez & Joseph Ferreira Jr., *Identifying and Characterizing Popular Non-Work Destinations by Clustering Cellphone and Point-of-Interest Data*, 113 CITIES 103158, at 1-2, 4-10 (2021) (identifying, through cellphone tracing and a Google Maps application, the most popular places in Singapore that attract the greatest number of non-work visitors during each hour of the week).

103. See, e.g., Victor Chang, *An Ethical Framework for Big Data and Smart Cities*, 165 TECH. FORECASTING & SOC. CHANGE 120559, at 1-2, 6 (2021) (illustrating the wide-ranging competencies of big data analytics in public transportation and addressing ethical concerns that these capabilities raise).

governance or policy-making but also as a revenue-generating asset that can be sold or otherwise traded with third parties.¹⁰⁴ This means that aggregated data is viewed as a potential asset owned or controlled by the city. As shown in Section II.C, while any normative consideration of whether to validate any such claim of entitlement by cities must address the legitimate interests of all relevant parties, a property analysis that establishes *in rem rights* but also extensive *in rem duties* on cities in dealing with such data may have the advantage of operating on the actual scales in which data is gathered.¹⁰⁵

II. RECONSIDERING THE ROLE OF CITIES' PROPERTY RIGHTS

A. City Property and the Public/Private Distinction

As shown in Section A.1, medieval European towns and cities acted as associations in which the collective entity held both political privileges and economic entitlements.¹⁰⁶ The town or city defended its inhabitants from outsiders but also controlled all resources within its boundaries.¹⁰⁷ In England, the city's corporate power was based on a corporate charter granted by the king, and the rights acquired by the charter were considered to be property rights that were deemed essential for protecting both political and economic interests.¹⁰⁸ Over time, and particularly with the rise of Parliament as the dominant political force in England, the status of the city charter and the rights granted by it became more controversial, especially over the political aspect of self-governance.¹⁰⁹

In colonial America and the early United States, cities and towns came to be viewed as corporations, although they had not been initially formed under a charter, as was the case in

104. See, e.g., Benjamin Freed, 'Smart Cities' Contemplate Turning Big Data into Big Money, STATE SCOOP (Apr. 3, 2019), [<https://perma.cc/GT73-JV67>]; see also *infra* notes 157-62, for additional resources.

105. See *infra* notes 186-93 and accompanying text.

106. See *supra* notes 33-41 and accompanying text.

107. See FRUG, *supra* note 33, at 27-28.

108. See *id.* at 34-35.

109. *Id.* at 32-36.

England.¹¹⁰ Moreover, cities were unlike business corporations that had been granted specific charters by the colonies, and later by state legislatures, entitling them to engage in certain kinds of enterprises, such as building and operating bridges, canals, water supply, or banking activities.¹¹¹

As courts gradually developed protections for investors' property in business corporations—leading, accordingly, to pressure on the legislature to extend the opportunities for incorporation from a favored few enterprises to the more general population—the actual conflation of business corporations and of cities as corporations became more problematic. State legislatures wanted to assert more political control over cities and towns and realized that granting them the type of strong protection from interference that was awarded to business corporations would run counter to this goal.¹¹² This process led to the development of the public/private distinction, anchored in the 1819 U.S. Supreme Court's decision in *Trustees of Dartmouth College v. Woodward*, in which the Court distinguished between private corporations that are founded by individual contributions of property by investors and public corporations that are founded by the government without such individual contributions.¹¹³ As Justice Story explained: "Another division of corporations is into public and private. Public corporations are generally esteemed such as exist for public political purposes only, such as towns, cities, parishes, and counties; and in many respects they are so, although they involve some private interests"¹¹⁴

Cities, as "public corporations," were therefore reconceptualized as entities that are part of the political system of government—and are accordingly subject to the political hierarchy of state and federal entities—with ensuing controversies that continue to date about the scope of power that

110. *Id.* at 36-40.

111. *See id.*

112. *See* FRUG, *supra* note 33, at 38-39.

113. *Id.* at 40-42; *see also* *Trs. of Dartmouth Coll. v. Woodward*, 17 U.S. (4 Wheat.) 518, 562-63 (1819).

114. *Woodward*, 17 U.S. (4 Wheat.) at 668-69 (Story, J., concurring).

cities and other local governments should have to act without explicit state/federal authorization.¹¹⁵

This does not mean, however, that property rights that cities hold in assets no longer matter or that they are simply a derivative of the scope of the city's political power of governance. As Chancellor Kent wrote in his *Commentaries on American Law* as early as 1826, although the powers of governance of local governments are subject to the control of the state legislature, “[t]hey may also be empowered to take or hold private property for municipal uses, and such property is invested with the security of other private rights.”¹¹⁶

Accordingly, property rights that cities acquire or otherwise hold in assets generally include the same kind of protection that private owners enjoy under the relevant legal system such that these rights also apply vis-à-vis upper-level governments. For example, in the United States, courts have held that when the federal government exercises the power of eminent domain over property owned by state or local governments, it is required to pay compensation according to the U.S. Constitution's Takings Clause, although this Clause does not make specific reference to publicly owned property.¹¹⁷ In *United States v. 50 Acres of Land*, the Supreme Court reasoned that “[w]hen the United States condemns a local public facility, the loss to the public entity, to the persons served by it, and to the local taxpayers may be no less acute than the loss in a taking of private property.”¹¹⁸

At the same time, in applying its property rights in assets vis-à-vis private parties—whether individuals or firms, residents or non-residents—the city may be subjected in principle to certain public or constitutional law duties, as demonstrated in Section I.B in the context of establishing differential rules for street parking or access to city-owned parks or beaches.¹¹⁹ But any such limits on exercising the city's property rights should not be simply

115. See Briffault et al., *supra* note 67, at 13-17, 20 (calling to broaden the principle of home rule for cities in U.S. law).

116. 2 JAMES KENT, COMMENTARIES ON AMERICAN LAW 275 (New York, O. Halstead 1826).

117. See U.S. CONST. amend. V, cl. 4; see, e.g., *United States v. 50 Acres of Land*, 469 U.S. 24, 31 (1984).

118. 469 U.S. at 31.

119. See *supra* notes 72-84 and accompanying text.

conflated with the general scope of its political power of governance or with the city's power to regulate privately owned properties.

Cities' property rights should have meaning and content that are not simply a derivative of such governance or regulatory powers. At the same time, their content should reflect the unique role of cities as public corporations, which is distinguished from that of private firms.¹²⁰ As I show in Part III, this calls for a normative reconsideration and re-delineation of cities' property rights, which identify not only the scope of *in rem rights* but also that of *in rem duties*.¹²¹ Such an approach also has the practical advantage of working on the same scales—physical and digital—in which city-owned assets operate in practice in a world that is increasingly typified by cross-border urbanism without undermining political or regulatory realms governed by the political system.¹²²

This approach resonates with the general mandate, awarded to a municipal corporation across many different legal systems, to “acquire needed property, real or personal, for its use and benefit as a local governmental organ.”¹²³ Such power may also extend to “the holding of land or other property located beyond the limits of the municipal corporation.”¹²⁴ Accordingly, under U.S. law, “[t]he two general classes of property which a municipal corporation may hold include, first, that property essential or convenient for it to function; second, property held for general convenience, pleasure and profit.”¹²⁵ That said, it is otherwise within the province of the relevant upper-level government (namely, the state or federal legislature) “to declare what is a municipal purpose.”¹²⁶

What this means, more fundamentally, is that unlike private corporations, which are generally entitled to engage in any kind of business and are at liberty to acquire any type of asset they

120. See *Trs. of Dartmouth Coll. v. Woodward*, 17 U.S. (4 Wheat.) 518, 562-63 (1819).

121. See *infra* notes 197-200 and accompanying text.

122. See *infra* note 205-06, 242-45 and accompanying text.

123. 10 EUGENE MCQUILLIN ET AL., MCQUILLIN MUN. CORPS. § 28:2, Westlaw (database updated July 2022).

124. *Id.*

125. 10 MCQUILLIN ET AL., *supra* note 123, § 28:10.

126. *Id.*

deem fit (subject to specific limits, such as relevant rules of antitrust law),¹²⁷ the purposes for which cities may acquire, use, and profit from assets should be in line with the general purposes for which local governments operate. Beyond the abovementioned power of upper-level governments in various legal systems to set the broad outlines of “municipal purpose[s],”¹²⁸ the operation of cities in acquiring and holding assets should be subject to a more fundamental normative analysis. Such an analysis should consider, on the one hand, the multiple tasks that cities are expected or practically required to take up in current times and, on the other, the need to guard against abuses of property when the city leverages its governance or monopolistic powers.¹²⁹

Thus, for example, the current approach toward allowing cities to engage in certain for-profit business activities, by providing services such as a cable TV station or a garbage collection service that competes with private businesses that operate within the territory of the city, is generally permissive—as long as the city does not abuse its governmental or regulatory powers to drive out or otherwise impair the ability of private businesses to compete with the city-owned enterprise.¹³⁰ In contrast, a city would be off-limits in acquiring real estate merely to make a speculative profit.¹³¹

More broadly, cities engage in an increasing number and variety of transactions involving assets that are owned or controlled by them. While such actions do not fall within the formal ambit of their governance or regulatory powers—and are part of the city’s “proprietary” capacity—these dealings cannot be hermetically detached from the city’s public-governance roles.

127. See Herbert Hovenkamp, *The Sherman Act and the Classical Theory of Competition*, 74 IOWA L. REV. 1019, 1044 (1989) (explaining that U.S. antitrust law was created as a tool to restrict anticompetitive behavior in the modern capitalist economy, and it therefore justifies placing certain limits on businesses’ rights to buy or sell property).

128. See 10 MCQUILLIN ET AL., *supra* note 123, § 28:10.

129. For the scope of applicability of antitrust law rules to local governments in the United States, see Max Schanzenbach & Nadav Shoked, *Reclaiming Fiduciary Law for the City*, 70 STAN. L. REV. 565, 600-02 (2018).

130. See generally GERALD E. FRUG ET AL., LOCAL GOVERNMENT LAW 732-33, 742-61 (4th ed. 2005) (discussing the concept of increasing municipal economic power through “greater use of the entitlements that cities have as property owners”).

131. See 10 MCQUILLIN ET AL., *supra* note 123, § 28:10.

One prominent example is the city of Chicago's decision in 2008 to sell to an investors' consortium the right to generate all revenues from its parking meters for a period of 75 years against a lump-sum payment of \$1.157 billion.¹³² While this deal raised public attention because of the contention that the deal severely under-valued this asset's true worth (a contention validated when the consortium already recouped the price in 2021, with 62 years left in the 75-year lease),¹³³ it points more broadly to the types and magnitude of city assets that are the object of market transactions with private corporations or of other types of asset monetization—such as public-private partnerships and other forms of privatization of activities formerly undertaken by the city.¹³⁴

In other words, in addition to the key type of “urban governance gap” identified in this Article—that which concerns the cross-border nature of city life—I argue that devising a comprehensive proprietary framework of cities' *in rem rights* and *in rem duties* in tangible and intangible assets can also handle another aspect of the urban governance gap. This latter aspect refers to the growing scope of asset production, utilization, and monetization that does not fall within cities' governmental or regulatory powers but cannot be entirely divorced from the underlying normative considerations that should guide cities in acting vis-à-vis both residents and non-residents.

What this means is that there is growing importance in reconsidering the underlying normative parameters for enabling cities to acquire or otherwise hold certain types of property and the general purposes for which such assets may be used or monetized so that cities can exercise their property rights in a way that also conforms to their general roles as public-governance entities. This point is demonstrated in the next Sections, which

132. For the details of this deal, and the (unsuccessful) legal and public challenges that followed, see Schanzenbach & Shoked, *supra* note 129, at 567-70, and *Indep. Voters of Ill. Indep. Precinct Org. v. Ahmad*, 13 N.E.3d 251, 252-55 (Ill. App. Ct. 2014).

133. See Fran Spielman, *Chicago Parking Meter Investors Rake in \$13M in Profit Despite Pandemic*, CHI. SUN TIMES (June 7, 2021, 5:30 AM), [<https://perma.cc/HKU2-T5Q5>] (reporting that by June 2021 the consortium recouped the investment plus \$500 million more).

134. See Schanzenbach & Shoked, *supra* note 129, at 570-72 (pointing to numerous types of such dealings).

deal, respectively, with physical city assets and the new type of digital assets that “smart cities” are accruing and considering to monetize: data.¹³⁵ Part III will then lay out the proposed principles for rescaling cities’ in rem rights and in rem duties in regard to city property.¹³⁶

B. The Growing Pressure on Physical City Assets

The general trend of increasing urbanization throughout the world is placing a corresponding pressure on the physical infrastructure of cities and on the demand for services that are provided to a considerable degree through assets that are owned or controlled by cities. While some types of services and assets are intended primarily for residents—such as education, at least under systems of government that assign these tasks primarily to local governments—other types of services and city assets practically serve diverse crowds of both residents and non-residents.

One prominent example is transportation. Across all countries, but especially in developing countries in which the pace of urbanization has been significantly higher than in developing countries,¹³⁷ population growth has turned transportation from, to, and within urban areas into a major challenge.¹³⁸ The need to address the growing traffic of persons and freight within and across city boundaries requires cities to engage in schemes of “city logistics” that are intended to optimize the use of city resources to facilitate the goals of “mobility, sustainability, and liveability” while lowering “costs for customers as well as reducing negative environmental impacts

135. See discussion *infra* Sections II.B, II.C.

136. See discussion *infra* Section III.B.

137. See HIRSCHL, *supra* note 10, at 4 (“[A]pproximately 88% of urban population growth since 1960 has taken place in the developing world, meaning that about 9 of every 10 new urban dwellers since 1960 reside in Asia, Africa, or Latin America.”).

138. Evans Mwamba et al., *Dynamic Effect of Rapid Urbanization on City Logistics: Literature Gleaned Lessons for Developing Countries*, 3 J. CITY & DEV. 37, 38 (2021). Similar challenges for cities may apply to different types of services and city assets, such as energy supply, with developing countries facing particularly strong pressure in the face of the rapid pace of urbanization. See, e.g., Nina Savela et al., *Rapid Urbanization and Infrastructure Pressure: Comparing the Sustainability Transition Potential of Water and Energy Regimes in Namibia*, 1 WORLD 49, 49-50 (2020) (examining the case of Namibia).

and improving safety.”¹³⁹ The city-logistics strategy is proving particularly essential for megacities¹⁴⁰—which, as already noted in Section I.A, are typified not only by a high number of residents but also by the constant inward and outward flow of multiple categories of non-residents (such as work commuters, persons who require onsite services from government offices or other types of businesses located in the megacity, shoppers, visitors/tourists, etc.).¹⁴¹ Accordingly, regardless of various questions that may arise about the power of governance of cities over non-residents—questions that may remain unresolved or otherwise ambiguous—cities are practically required to acquire, manage, and operate transportation-related assets in the service of various crowds.

Particular attention should be paid in this context to various schemes of road-traffic pricing that are currently operated by various cities across the world. The key purpose of such pricing is to address various types of externalities that are caused by motor vehicle traffic—most prominently congestion (namely, the externalities that drivers inflict on one another by causing time delays and related costs) but also social costs related to accidents, air pollution, and so forth.¹⁴²

Academic literature has been dealing with road traffic pricing since William Vickrey’s work, which called to introduce road pricing based on the principles of Pigouvian welfare economics.¹⁴³ Under this theory, road pricing has an advantage over command-and-control policies such as outright bans on driving or restrictions on the days when a vehicle can be driven.¹⁴⁴ This is so because road pricing induces adjustments in trip frequencies, destination, mode (e.g., moving to public

139. See, e.g., Eiichi Taniguchi et al., *Recent Trends and Innovations in Modelling City Logistics*, 125 *PROCEDIA SOC. & BEHAV. SCIS.* 4, 4-5 (2014).

140. See *id.* at 5 (pointing to the particularly complicated problems of city logistics that megacities may face).

141. See *supra* notes 43-46 and accompanying text.

142. See Alex Anas & Robin Lindsey, *Reducing Urban Road Transportation Externalities: Road Pricing in Theory and in Practice*, 5 *REV. ENV’T ECON. & POL’Y* 66, 66-68 (2011).

143. Alex Anas, *The Cost of Congestion and the Benefits of Congestion Pricing: A General Equilibrium Analysis*, 110 *TRANSP. RSCH.* 110, 111 (2020); see also William S. Vickrey, *Pricing in Urban and Suburban Transport*, 53 *AM. ECON. REV.* 452, 461-65 (1963).

144. Anas & Lindsey, *supra* note 142, at 67.

transportation), time of day, and long-run location decisions.¹⁴⁵ Moreover, road pricing can be changed according to the type and magnitude of the congestion externality.¹⁴⁶

Moving from theory to practice, congestion pricing has become increasingly palatable because of the rising costs of congestion in big cities that are typified not only by a high overall volume of traffic but moreover by the constant inward and outward flow of traffic.¹⁴⁷ Accordingly, cities such as Singapore, London, and Stockholm have introduced congestion pricing in their central areas.¹⁴⁸ These mechanisms apply to either certain cordons leading to and from the central city or Central Business District (CBD), as is the case in Singapore and Stockholm, or for any car movement within a certain zone located around the city center, as is the case in London.¹⁴⁹ Charges vary based on the day and time of travel, with certain types of vehicles being exempt from tolls.¹⁵⁰

Importantly, the congestion pricing schemes that apply in Singapore, London, and Stockholm are different from most other types of toll roads that are prevalent around the world. For the latter, “toll revenues are used either to cover maintenance and amortize construction costs or to make a profit for private operators.”¹⁵¹ As such, congestion-based, or more generally externalities-based, pricing is not only more effective in lowering congestion costs (and to a lesser degree, environmental costs),¹⁵² but it also has merit in promoting efficient and fair cross-border urbanism and is normatively superior in promoting the goals that cities should serve as proprietary owners.

145. *Id.*

146. *Id.*

147. See Anas, *supra* note 143, at 111.

148. For a review of these specific road pricing schemes, see Anas & Lindsey, *supra* note 142, at 68, 71-77.

149. *Id.* at 71-76.

150. *Id.* at 72-73, 75.

151. *Id.* at 71.

152. Anas & Lindsey, *supra* note 142, at 77 (showing that environmental benefits of road pricing amount “to only a small fraction of the benefits from drivers’ time savings”); see also Anas, *supra* note 143, at 120-24, 126 (showing, in the case of Greater Los Angeles region in California, that toll pricing has relatively small effects on long-run location decisions by persons and residents).

This is so because adopting a congestion-based pricing mechanism for using physical city-owned assets, such as transportation arteries, is generally more transparent, and it better promotes the role of the city as an open place that serves various crowds, including non-residents. A genuine externalities-based pricing mechanism undermines the ability of cities to engage in various forms of unwarranted parochialism by categorically favoring certain types of users regardless of an analysis of the marginal costs and benefits embedded in using city-owned resources (even if cities properly account for costs imposed on residents via local taxes or levies). Accordingly, empirical studies on the distributive impacts of congestion-based pricing show that the balance of winners and losers is far from being one that necessarily favors city insiders over outsiders or high-income households over low-income ones.¹⁵³ Thus, for example, the “availability of public transit limits the welfare losses of low-income groups,” such that they may gain from such schemes when toll revenues are reinvested by the city to improve public transportation.¹⁵⁴

Therefore, cities can act as asset-owners in a way that allows them to internalize the marginal costs and benefits they incur as property owners and operators of physical assets—requiring non-proprietary users to do the same through a pricing mechanism¹⁵⁵—while at the same time maintaining their role as a hub for activities by diverse crowds of residents and non-residents. Identifying the growing pressure that cities face on assets they own or control while considering the broader goals that cities should promote in the current urban environments may set the stage for filling potential “governance gaps” through reconsidering the scope of cities’ property rights.

153. See Benjamin Bureau & Matthieu Glachant, *Distributional Effects of Road Pricing: Assessment of Nine Scenarios for Paris*, 42 *TRANSP. RSCH.* 994, 994-95, 1005-06 (2008).

154. Anas & Lindsey, *supra* note 142, at 79.

155. See Harold Demsetz, *Toward a Theory of Property Rights*, 57 *AM. ECON. REV.* 347, 348-49 (1967). Internalization serves as a key justification for the delineation of property rights in assets. Harold Demsetz’s classic work discusses the evolution of property rights to handle externalities and related problems of under-investment and over-use of scarce resources when property rights do not exist or are not enforced. See generally Demsetz, *supra*.

C. The New Property for Cities: Aggregated Data

As shown in Section I.C, many cities around the world, typically dubbed “smart cities,” engage in collecting mass amounts of data through various digital technologies about everyday actions taken by persons, whether residents or non-residents, located in and across city borders.¹⁵⁶ In so doing, cities collaborate with private entities, mostly technology companies, in collecting, analyzing, and employing such data to promote their respective interests.¹⁵⁷ While the stated purpose of cities in collecting such data has been to improve their governance capabilities and to allow for data-driven city planning, infrastructure development, effective regulation, and so forth,¹⁵⁸ technology companies are evidently interested in using such data to increase their profits.¹⁵⁹ Besides the often-blurred lines between cities and corporations about which party gets to use the data and to what extent—an issue that increases concerns over the publicly unaccountable exploitation of pieces of personal information that comprise the data¹⁶⁰—cities are now beginning also to explicitly explore the possibility of monetizing the data, including by its sale to third parties.¹⁶¹ City officials, alongside other policy-makers and commentators in various countries, are

156. See *supra* notes 88-89, 102-03 and accompanying text.

157. See Astrid Voorwinden, *The Privatised City: Technology and Public-Private Partnerships in the Smart City*, 13 *Law Innovation & Tech.* 439, 440-41 (2021); see also, e.g., Albert Meijer & Manuel Pedro Rodríguez Bolívar, *Governing the Smart City: A Review of the Literature on Smart Urban Governance*, 82 *INT’L REV. ADMIN. SCIS.* 392, 393 (2016) (discussing Amsterdam as an “urban living lab” for businesses).

158. See Meijer & Bolívar, *supra* note 157, at 393-94, 400-01.

159. See Voorwinden, *supra* note 157, at 440.

160. *Id.* at 449-59 (discussing the need to safeguard public values in smart cities in light of such public-private partnerships, particularly to ensure the protection of personal data gathered by private corporations).

161. See, e.g., Freed, *supra* note 104; see also Kalev Leetaru, *When Will Cities Begin to Monetize Their Residents’ Data?*, *FORBES* (July 19, 2018, 6:05 PM), [<https://perma.cc/W7TH-72H2>]; Kitty Kolding, *One Approach for Cities to Recoup Lost Revenues Due to COVID-19*, *MEETING OF THE MINDS* (May 5, 2020), [<https://perma.cc/AUU8-BRH4>].

voicing their support for such a move,¹⁶² with workshops being offered to cities on how to monetize their data.¹⁶³

The first systematic effort at creating a public-private market platform for the exchange of such data was undertaken by the city of Copenhagen, Denmark, in collaboration with the technology company Hitachi between 2015 and 2018.¹⁶⁴ The City Data Exchange (CDE) program was set up to test the readiness of such a potential marketplace for data.¹⁶⁵

According to a 2018 report published by the city of Copenhagen, the most sought-after datasets by both public and private actors concerned information on how people move around the city, including their various locations and frequency of movement, with such data labeled “people movement patterns.”¹⁶⁶ This data is collected from numerous sources, such as “cell phone tracking, wireless connection counting, camera image counting, traffic sensors, visual surveying, [and] ticket purchases.”¹⁶⁷ While the city is interested in such data primarily for traffic planning, use of public spaces, or health and safety issues, public utility providers and private corporations seek to improve business efficiency and profitability.¹⁶⁸ Retailers use such data for locating stores or engaging in targeted marketing.¹⁶⁹ Transportation companies “request[] information on the number of people traveling between different geographical locations to understand their market share, but also to adjust their offerings.”¹⁷⁰ Tourism organizations seek data on the “flow of

162. See Freed, *supra* note 104 (citing Erik Caldwell, deputy chief operating officer for the city of San Diego, California, saying that while “[i]t’s the people’s data” and “[i]t’s on us to keep it that way,” he is “very interested in monetizing the data”); Sajeesh Kumar N. & Bibek Debroy, *City Data Monetization Could Help Our Development Road Map*, MINT (Sept. 18, 2019, 11:50 PM), [<https://perma.cc/4D59-AQWV>].

163. See, e.g., *Ensuring Cities Are Getting Full Value and Meaningful Revenue from Their Valuable Data*, CHRYSALIS PARTNERS, [<https://perma.cc/KC2X-GT5X>] (last visited Jan. 8, 2023) (advertising a workshop for municipalities on monetizing their data).

164. See Kumar & Debroy, *supra* note 162; SMART CITY INSIGHTS, *CITY DATA EXCHANGE - LESSONS LEARNED FROM A PUBLIC/PRIVATE DATA COLLABORATION 2* (2018), [<https://perma.cc/VY9J-PTN3>].

165. See SMART CITY INSIGHTS, *supra* note 164, at 2.

166. *Id.* at 3 (emphasis omitted).

167. *See id.*

168. *See id.*

169. *Id.*

170. See SMART CITY INSIGHTS, *supra* note 164, at 4.

tourists from different countries to inform [their] industry on how to provide better services for tourists.”¹⁷¹

At the same time, the CDE project also attested to the then-immaturity of the market, the lack of specific-use cases exemplifying how selling or buying of data benefited companies, the fragmented data landscape, and the reluctance by many organizations to share data on an open data portal—because of unclarity about data ethics or simply to prevent competitors from gaining access to such data.¹⁷²

Current attempts at creating digital platforms for data exchange, which could in turn enable cities and private corporations to monetize the data they collect, demonstrate that while some of the market immaturity problems may have been overcome since then, it is essential to address the fundamental legal and regulatory questions that concern ownership or control of the data and, in particular, to consider the rights and interests of the sources of the different pieces of raw data—namely, both residents and non-residents that move in, around, and out of the city.

Consider the Open Mobility Foundation (OMF),¹⁷³ set up by the city of Los Angeles in 2019 as a forum where local officials and private companies can “collaborate on mobility data sharing,” with the assumption that such information should be a public resource and would thereby allow cities to “apply uniform requirements and work together” on mobility regulations.¹⁷⁴ Alongside about fifty cities in the United States and across the world, the OMF includes a number of private mobility providers, such as e-scooter and bike-share companies, and other public and private entities.¹⁷⁵

According to the framework set up by OMF, the Mobility Data Specification (MDS)—the digital tool that “standardizes

171. *Id.*

172. *Id.* at 6-7.

173. See *About the Open Mobility Foundation*, OPEN MOBILITY FOUND., [https://perma.cc/F8PX-VV6M] (last visited Jan. 8, 2023).

174. See Laura Bliss, *Scooter Rides Have Turned into a Data Privacy Issue for Cities*, BLOOMBERG (Nov. 10, 2021, 3:00 AM), [https://perma.cc/XL65-SN79].

175. See *About MDS*, OPEN MOBILITY FOUND., [https://perma.cc/LKK8-CJMU] (last visited Jan. 8, 2023); *The Open Mobility Foundation Overview*, OPEN MOBILITY FOUND., [https://perma.cc/ZC7F-ZELG] (last visited Jan. 27, 2023).

communication and data-sharing between cities and private mobility providers”—enables cities to “share and validate policy digitally” and also provides private mobility companies with a “framework they can re-use in new markets, allowing for seamless collaboration that saves time and money.”¹⁷⁶ This means that beyond the exploitation of data that each of the private companies is constantly gathering on its own users, such companies also have access to city-generated data that companies can then use for profit-maximizing. Moreover, critics of the OMF argue that a recently established startup company, Lacuna Technologies, Inc., “helped finance the OMF and recruited other cities and companies to join the consortium” without publicly disclosing its commercial interests in the matter.¹⁷⁷ In response, civil society organizations, such as the American Civil Liberties Union, have initiated legal proceedings—unsuccessful so far—arguing that the gathering and sharing of such data invades the privacy of users and that the Los Angeles Department of Transportation (LADOT) “has never articulated an adequate or reasonable justification for the collection of such sensitive location information en masse.”¹⁷⁸

Therefore, it seems that while the marketplace for the exchange and potential monetization of smart-city data is increasingly maturing—in the sense that both cities and private companies realize the potential of exchanging and trading in data, and that accordingly cities are viewing aggregated data as a form of “new property” that may go beyond a tool for better governance—it becomes essential to consider normatively and doctrinally the proprietary status of such data. In particular, such an analysis should inquire if cities are entitled to exploit such data not only as a tool for better governance and provision of services but also as a tradable asset—and if so, under what terms.

While a comprehensive analysis of the proprietary features of data is outside the scope of this Article,¹⁷⁹ it may be useful to

176. *See id.*

177. Bliss, *supra* note 174.

178. *Id.*

179. For a general analysis of data/information and property rights, see, for example, Andreas Boering et al., *Data Ownership—A Property Rights Approach from a European Perspective*, 11 J. CIV. L. STUD. 323, 325-26 (2018); FAIRFIELD, *supra* note 97, at 2-12;

distinguish at the outset between the *conceptual* analysis of data as an intangible resource that is capable of being a potential object of property rights—identified and notionally carved out from the rest of the world and holding economic value—and a *normative* analysis about who should be entitled to control and profit from a certain piece or cluster of data.

Conceptually, the principles of property law generally require that the object would be clearly described and delineated and that the asset's outer limits—whether physical or conceptual—would be known publicly so that unauthorized parties would not encroach on it.¹⁸⁰ While the form of publicity may vary, distant parties should have a practical way of identifying the object and rights thereto so as to “[k]eep off.”¹⁸¹ Data poses particular conceptual challenges in the attempt to distinguish between general information about the world and a particular compilation of information that has been generated through a deliberate process and has a distinct value as such.

As Sjef van Erp shows in the context of COVID-19 tracing and tracking electronic apps, one can distinguish between a specific piece of data extracted about a person and the aggregation and cross-data analysis of data that is then undertaken by health authorities and corporations.¹⁸² As shown below, this conceptual multi-layering of data may also have normative significance in that it illuminates the different production/compilation roles and interests of various stakeholders.¹⁸³ In the case of health-related data, this may relate to persons/patients, healthcare providers, public-health authorities, pharmaceutical companies, producers of medical hardware/software, etc.¹⁸⁴

Lyria Bennett Moses, *Who Owns Information? Law Enforcement Information Sharing as a Case Study in Conceptual Confusion*, 43 UNIV. N.S.W. L.J. 615, 615-19 (2020); Sjef van Erp, *Ownership of Data: The Numerus Clausus of Legal Objects*, 6 BRIGHAM-KANNER PROP. RTS. CONF. J. 235, 235-36.

180. See THOMAS W. MERRILL & HENRY E. SMITH, THE OXFORD INTRODUCTIONS TO U.S. LAW: PROPERTY 4-11 (Dennis Patterson ed., 2010).

181. Felix. S. Cohen, *Dialogue on Private Property*, 9 RUTGERS L. REV. 357, 373-74 (1954).

182. Sjef van Erp, *Who “Owns” the Data in a Coronavirus Tracing (and/or Tracking) App?*, in CORONAVIRUS AND THE LAW IN EUROPE 131, 152-56 (Ewoud Hondius et al. eds., 2021) [hereinafter van Erp, *Data*].

183. See discussion *infra* notes 186-90.

184. See van Erp, *Data*, *supra* note 182, at 139.

In the context of smart cities, the process of complication, aggregation, and cross-cutting analysis of different pieces of data coming from multiple sources in and around the city is done primarily through a collaboration between the municipality and technology companies. Moreover, the process of *anonymizing* the data—to the extent that such a step can be reliably done, guaranteed, and monitored over time to protect the privacy interests of persons while meeting the requirements of legal norms such as the European Union’s General Data Protection Regulation (GDPR)¹⁸⁵—may add a further dimension to the potential conceptual distinction between the indefinite pieces of personalized data and between aggregated *and* anonymized data on people’s movement patterns.

This conceptual analysis ties into the normative consideration of which party or parties should be entitled to collect, control, use, or profit from such data—and under what conditions. The potential distinction between a piece of information that is derived from a person and identifies him or her as the source of information and between an aggregated and anonymized cluster of data that has value in identifying collective patterns of behavior, such as movement patterns, may also have normative implications. The unbundling of a raw piece of data from a mass cluster can also allow for an unbundling of a single definition of “ownership” in data and parts thereof.¹⁸⁶ The more appropriate way to set out the entitlements to certain aspects of control, access, use, and profit-making in data could rather be one of relative title and use-specific entitlements, which involves considering the role of different stakeholders in collecting the data and their potential interests.

Thus, while a person’s interest in a personalized piece of information can be validated not only in terms of the right of privacy but also in recognizing his or her proprietary entitlement

185. See generally Regulation 2016/679, of the European Parliament and of the Council of 27 April 2016 on the Protection of Natural Persons with Regard to the Processing of Personal Data and on the Free Movement of Such Data, and Repealing Directive 95/46/EC (General Data Protection Regulation), 2016 O.J. (L 119).

186. See van Erp, *Data*, *supra* note 182, at 152-55.

to it,¹⁸⁷ the normative justification for allowing cities to aggregate data—while anonymizing it—even if explicit consent by each one of the sources of the raw data cannot typically be assumed, may lie in the anticommons theory of property.¹⁸⁸ Under this theory, the over-fragmentation of private property rights can lead to inefficient and unjust results, from deadlocks among adjacent landowners about restructuring rights to allow for effective redevelopment of the entire area to the undersupply of biomedical innovation due to exclusive patents over fragments of knowledge.¹⁸⁹ “Too much private property” could be detrimental to asset governance and collective action.¹⁹⁰

While the result of an anticommons dynamic should obviously not lead to a sweeping abolishment of private property rights or their preemption by the government or private parties that can allegedly generate more value from taking over all fragmented rights, this analysis could serve as a benchmark for reconsidering the concept of relative title or the unbundling of property rights. Accordingly, in considering which parties should be entitled to collect, integrate, and utilize clusters of a certain type of tangible or intangible resource, the analysis should look not only to the party that would be most effective in governing and utilizing such aggregation of assets from a social-welfare perspective but also to the one that could be held accountable for potential misuses.¹⁹¹

187. FAIRFIELD, *supra* note 97, at 99-118 (arguing that recognizing a person’s property rights in information can help to “stop government snooping”).

188. See Michael A. Heller & Rebecca S. Eisenberg, *Can Patents Deter Innovation? The Anticommons in Biomedical Research*, 280 SCI. 698, 698-99 (1998).

189. See *id.* at 699-700.

190. MICHAEL HELLER, *THE GRIDLOCK ECONOMY: HOW TOO MUCH OWNERSHIP WRECKS MARKETS, STOPS INNOVATION, AND COSTS LIVES* 2 (2008). This view has not remained uncontested. See, e.g., Richard A. Epstein, *Heller’s Gridlock Economy in Perspective: Why There Is Too Little, Not Too Much Private Property*, 53 ARIZ. L. REV. 51, 51-53 (2011); see also Jorge L. Contreras, *The Anticommons at 20: Concerns for Research Continue*, 361 SCI. 335, 337 (2018) (showing how certain information-sharing industry practices can alleviate the anticommons problem).

191. For an analysis of various anticommons dynamics and the types of proprietary settings that can address such problems (including by moving away from regular ownership to a model of trust governance), see Amnon Lehavi, *The Law of Trusts and Collective Action: A New Approach to Property Deadlocks*, 89 CIN. L. REV. 388, 390-91 (2021); see also LEE ANNE FENNELL, *SLICES AND LUMPS: DIVISION AND AGGREGATION IN LAW AND LIFE* 15, 22-26 (2019) (discussing the challenge of trying to secure cooperation to allow for either an aggregation or division of resources).

Therefore, in the context of digital data about activities taking place in and around a city—data that is gathered from an indefinite number of data sources (such as persons moving around the city) and numerous types of devices (e.g., GPS location, sensors, cameras, automatic meter reading)—the city itself can be deemed the party that should have a relative title or claim to aggregated data. The city can benefit from the aggregation and cross-cutting analysis of data in promoting its normatively legitimate goals as a local government—a point I address in detail in Section III.A¹⁹²—while at the same time being held accountable for potential misuses of such aggregated data. Such accountability should be based not only on public law duties but also on defining the in rem duties that the city has toward different types of parties, including persons that are the source of raw data.

In other words, while recognizing certain in rem rights that a city may have in collecting, aggregating, analyzing, and utilizing smart-city data, it should also be subject to in rem duties in its proprietary capacity—ones that may obligate it, for example, to prevent the re-identification of anonymized data, including by third parties, such as technology corporations, transportation providers, retailers, or other cities with which the city shares data or to which such data is sold. This means, for example, that if a retail company that receives aggregated and anonymized data from the city engages in “reverse engineering” and re-identifies persons who are the sources of the raw data in order to commercially “target” them, then such an act can also be considered to be a violation by the city itself of its in rem duty to prevent violation of privacy in exploiting the data.

Accordingly, the scope of such proprietary in rem duties and of correlative respective rights—such as the right of a person not to be identified as the source of a piece of data when such identification would violate his or her privacy—should not depend on whether the potential right-bearer is a resident of the city. Namely, unlike the scope of political governmental authority of a city vis-à-vis persons—which may change in the case of residents, non-local nationals, or foreigners and in many cases may remain in a gray area because of the “governance gap”

192. See *infra* notes 197, 205-08 and accompanying text.

I identified earlier¹⁹³—in the case of proprietary in rem duties, what matters is whether a person—*any person*—has been the source of a piece of data that was later aggregated or utilized by the city. In Section III.B, I discuss in detail what such an array of in rem rights and in rem duties may look like.¹⁹⁴

III. RESCALING CITY PROPERTY IN A CROSS-BORDER REALITY

A. Why Cities Matter for Intra-Local and Inter-Local Openness

As Section II.A has shown, in the context of the development of the public/private distinction in U.S. law and similar conceptions developed in other legal systems around the world, local governments—including cities—are viewed as public or governmental corporations.¹⁹⁵ What this means, among other things, is that unlike private corporations that are generally entitled to engage in any kind of business and are at liberty to acquire any type of asset as they deem fit, subject to few constraints,¹⁹⁶ cities act as governmental entities within the authority granted to them under a certain legal system. Consequently, the purposes for which cities may acquire, use, and monetize assets should be in line with the broader purposes that local governments should promote.

Thus, beyond the need to abide by legal rules that govern the allocation of power between upper-level governments and local ones and general doctrines that apply to all types of public entities in the relevant legal system, a city should be subject more fundamentally to a normative evaluation of the goals it seeks to promote, even when it acts in a “proprietary” capacity—that is, for example, when it decides to sell or rent an asset that it owns to a private party or when it competes in the market for the

193. See *supra* text accompanying notes 15-16.

194. See *infra* notes 240-45 and accompanying text.

195. See *supra* notes 113-15 and accompanying text.

196. See Hovenkamp, *supra* note 127, at 1044 (explaining that U.S. antitrust law was created as a tool to restrict anticompetitive behavior in the modern capitalist economy and therefore justifies placing certain limits on businesses’ rights to buy or sell property).

provision of services or products alongside private corporations.¹⁹⁷

Accordingly, the normative analysis of legitimate city action should apply to all stages and aspects of its proprietary rights and duties. This includes the fundamental questions about which types of assets a city should be entitled to own or control—including, for that matter, aggregated data that it collects about patterns of movement of residents and non-residents across the city—or under which circumstances it may exclude certain persons from accessing or using city-owned assets. In other words, allowing cities to exert their property rights in assets in a differential and creative manner to account for their current cross-border reality—which is the key thesis being promoted in this Article—should be subject to identifying the underlying normative criteria that cities should meet and how such criteria affect the correlative rights and duties of diverse categories of persons.

This Section does not explore in detail the various arguments that have been made in the academic literature and public discourse over the past few decades about the ideologies that should guide cities, such as the idea of the “neoliberal city” that gained traction in the United States and elsewhere during the 1980s and 1990s¹⁹⁸ or competing models of welfare-oriented cities.¹⁹⁹ It seeks, rather, to focus on certain values that are particularly important in the context of cross-border urbanism—and that consequently have a bearing on the way in which cities should control and use their tangible and intangible assets—and how this should translate into in rem rights and in rem duties. Such values deal with intra-local and inter-local openness and, with it, diversity and tolerance.

197. See, e.g., Schanzenbach & Shoked, *supra* note 129, at 594-95 (reasoning that the public trust doctrine in U.S. law “restricts cities’ freedom in transacting with assets because the public is held to be the assets’ beneficial owner”).

198. See JASON HACKWORTH, *THE NEOLIBERAL CITY: GOVERNANCE, IDEOLOGY, AND DEVELOPMENT IN AMERICAN URBANISM*, at xi-xii, 9-13 (2007) (critically examining the evolution of this idea and its practice in various American cities).

199. See SCHRAGGER, *supra* note 9, at 247-55 (arguing that cities should be given more power to improve the health and welfare of their citizens and to ameliorate inequality, such as by imposing a municipal minimum wage).

What this essentially means is that in designing the proprietary rights and duties of cities in their assets—and particularly their right to exclude or otherwise control access to such assets or the right to collect and aggregate data about persons' movements while potentially monetizing it—cities should be generally committed to promoting openness, diversity, and tolerance, not only toward their residents-voters but also toward various crowds of workers-commuters, visitors, etc. Thus, while cities should be generally entitled, as asset owners, to require persons who use city assets to internalize the marginal costs they generate—including in cases where the city's political or fiscal power of governance is not clearly articulated to address various categories of users—they should do so in a manner that seeks to facilitate the role of cities as a hub of cross-border activities.

The view of cities as places of intra-local and inter-local openness, diversity, and tolerance seeks not only to recognize and validate the economic, organizational, and technological features of contemporary cities and their instrumental value in facilitating cross-border markets but also to promote other values. Gerald Frug sees the key role of cities as one that seeks “to increase the capacity of metropolitan residents to live in a world composed of people different from themselves.”²⁰⁰ Referring to the works of Iris Young,²⁰¹ Richard Sennett,²⁰² Jane Jacobs,²⁰³ and others, Frug articulates the challenges but also the benefits of urban openness and heterogeneity. These benefits include the psychological contribution of a more open way of life for human development and growth, the social goal of overcoming interpersonal suspicion and fear, and the potential for alleviating the political divisions that characterize many metropolitan areas.²⁰⁴

Therefore, intra-local and inter-local openness, diversity, and tolerance—which generally distinguish cities from many

200. FRUG, *supra* note 33, at 115.

201. *Id.* at 11, 137 (citing IRIS YOUNG, *JUSTICE AND THE POLITICS OF DIFFERENCE* (1990)).

202. *Id.* at 116, 119-22, 138-40 (citing RICHARD SENNETT, *THE USES OF DISORDER: PERSONAL IDENTITY AND CITY LIFE* (1970)).

203. *Id.* at 123-24, 141 (citing JANE JACOBS, *THE DEATH AND LIFE OF GREAT AMERICAN CITIES* (1961)).

204. *Id.* at 137-142.

suburbs, and even more so from “private communities,” such as residential community associations²⁰⁵—are not only instrumental in allowing cities to work as cross-border economic hubs but are also self-standing normative virtues that should be promoted. According to Frug, as well as other authors, such as Richard Schragger, this calls for reconceiving and *strengthening* city power, rather than centralizing power in a regional or national government.²⁰⁶

In the context of the cross-border reality that is the focus of this Article, while a major political realignment of governance power between cities and national governments, or on the international scene, seems unlikely—thus leaving intact the urban governance gap detailed above—reconceiving cities’ in rem rights and in rem duties in assets may allow them to utilize such tangible and intangible assets to promote the instrumental and deontological goals of cross-border openness. Such in rem rights and in rem duties could cover the actual geographical and digital scales within which cities operate and would accordingly apply to various groups of residents and non-residents.

This property re-scaling may prove effective not only on the domestic front but also internationally. Thus, while cities have no formal standing in international law,²⁰⁷ cities should generally be allowed to trade in assets with cities in other countries, especially in the case of intangible assets, such as aggregated and anonymized data, in order to promote goals such as fostering economic, cultural, and technological collaboration, or addressing climate change—thereby allowing for efficient utilization of resources while promoting cross-border openness. The following Section sets out to consider how such in rem rights and in rem duties should be designed.²⁰⁸

205. For the characteristics of many suburbs and “private communities” as places aimed at homogeneity and exclusion, see, respectively, FISCHER, *supra* note 70, at 202-06, 215-19; EVAN MCKENZIE, *PRIVATOPIA: HOMEOWNER ASSOCIATIONS AND THE RISE OF RESIDENTIAL PRIVATE GOVERNMENT* 56-78 (1994).

206. FRUG, *supra* note 33, at 118; SCHRAGGER, *supra* note 9, at 253-55.

207. Barbara Oomen & Moritz Baumgärtel, *Frontier Cities: The Rise of Local Authorities as an Opportunity for International Human Rights Law*, 29 EUR. J. INT’L L. 607, 621 (2018).

208. See *infra* Section III.B.

B. Redefining City Property: In Rem Rights, In Rem Duties

In light of the urban governance gap identified in this Article,²⁰⁹ there is a pertinent need to establish a comprehensive legal framework that governs the proprietary rights and duties of cities in tangible and intangible assets—and the correlative rights and duties of diverse groups of persons who use such assets or are otherwise affected by them, whether they are residents or non-residents.

How should such in rem rights and in rem duties concerning city assets be designed? How would these diverge, if at all, from the general contours of rules on private property designed in different legal systems, on the one hand, and from national-government ownership, on the other? Such a potential blueprint requires us to briefly consider the in rem trait of proprietary rights and duties and how this feature establishes certain structural components in the design and enforcement of norms that govern the access, control, and use of an asset that would apply toward large, often indefinite numbers of heterogeneous norm-subjects—but without essentially dictating a single pre-fixed content of property norms for all types of resources and/or all types of owners.

In his seminal work, Wesley Hohfeld set out to challenge the traditional dichotomy, dating back to Roman law, between in rem (Latin: “against a thing”) and in personam (“against a person”).²¹⁰ Defining and analyzing the different attributes of in personam rights through a delineation of jural opposites and jural correlatives that govern legal relationships among persons (such that, for example, one person’s right is correlated with a duty imposed on another person), Hohfeld argued that the same typology of jural opposites and jural correlatives applies to in rem rights—save for the large, indefinite number of persons who are bound by these interpersonal legal relationships.²¹¹

209. See *supra* Part I.

210. See Wesley Newcomb Hohfeld, *Fundamental Legal Conceptions as Applied in Judicial Reasoning*, 26 YALE L.J. 710, 720-29 (1917).

211. See Wesley Newcomb Hohfeld, *Some Fundamental Legal Conceptions as Applied in Judicial Reasoning*, 23 YALE L.J. 16, 28-32 (1913); Hohfeld, *supra* note 210, at 710-17.

Whereas Hohfeld's enterprise was largely analytical-conceptual—one addressing the legal structure of property—the “subsequently developed metaphor of the ‘bundle of rights’” served also a normative purpose, especially by twentieth-century legal realists and critical legal theorists, who sought to decanonize the institution of property on an ideological basis.²¹² Under this account, property is not a natural right but is rather a legal institution that is a creature of the State and could thus be designed to promote broad social goals beyond preserving the owner's dominion.²¹³

The counter-movement to this line of argument, which I elsewhere dubbed “new essentialism,” emerged in the late twentieth century and early twenty-first century.²¹⁴ According to James Penner, the fundamental interest protected by property law is grounded in the use of objects—thus returning somewhat to the original meaning of the term in rem—and characterized by the exclusion of others, meaning that property norms protect the interest of use through exclusion.²¹⁵ Under his characterization of norms in rem, the owner's in rem rights to property use are individuated and framed in terms of a duty in rem to exclude oneself from the property of others—meaning that the duty not to interfere with the assets of others applies universally to all non-owners.²¹⁶

In a series of influential works, Thomas Merrill and Henry Smith argue that in rem rights are qualitatively different from in personam rights even if the property/contract borders are not always clear, reasoning that different legal systems continue to embrace a numerus clausus principle of property forms, that property rights retain at least a basic layer of a universal right of exclusion in favor of the owner good against the world, and that these distinctive traits of property law can be justified as socially

212. Amnon Lehavi, *The Property Puzzle*, 96 GEO. L.J. 1987, 2001 (2008).

213. For an analysis of this literature, see AMNON LEHAVI, *THE CONSTRUCTION OF PROPERTY: NORMS, INSTITUTIONS, CHALLENGES* 26-30 (2013) [hereinafter LEHAVI, CONSTRUCTION].

214. *Id.* at 46-49.

215. J. E. PENNER, *THE IDEA OF PROPERTY IN LAW* 68-74 (1997).

216. *Id.* at 128-152; see also Eric R. Claeys, *Property, Concepts, and Functions*, 60 B.C. L. REV. 1, 51 (2019) (arguing that when an in rem right is institutionalized, “it also establishes correlative *in rem* duties and disabilities on non-proprietors”).

efficient in view of systemic information and enforcement costs.²¹⁷

While I dispute Merrill and Smith's arguments about the essential *substantive* content of property, and especially the contention that the right to exclude is the inherent core of ownership regardless of the nature of the asset or the type of owner²¹⁸—and I explain the implications of my viewpoint for city-owned assets below²¹⁹—I share the notion that as a *structural* matter, property differs from other types of obligations and that property law is “shaped largely to reduce the informational burdens of the owners and non-owners who have to cope with the system.”²²⁰

This is particularly so because of the way in which legal rights and duties regarding both specific assets and more generally categories of resources (such as land, chattels, financial instruments, intellectual property, or data) regularly implicate numerous parties with diverging features and interests. Beyond the fact that such parties are usually not identifiable to one another in advance—unlike parties that have a privity of contract among them—they often turn out to be more heterogeneous in their epistemological, cultural, and social attributes, as compared with typical contractual counterparts. What this generally means is that for property to function well in creating, allocating, and enforcing in rem rights and duties, it must facilitate broad-based understanding about the way in which property legal interests are structured and defined.²²¹

217. See Thomas W. Merrill & Henry E. Smith, *The Property/Contract Interface*, 101 COLUM. L. REV. 773, 774-78, 792-99 (2001) [hereinafter Merrill & Smith, *The Property/Contract Interface*]; Thomas W. Merrill & Henry E. Smith, *Optimal Standardization in the Law of Property: The Numerus Clausus Principle*, 110 YALE L.J. 1, 3-9 (2001); Thomas W. Merrill & Henry E. Smith, *The Morality of Property*, 48 WM. & MARY L. REV. 1849, 1855 (2007) [hereinafter Merrill & Smith, *The Morality of Property*].

218. See Merrill & Smith, *The Morality of Property*, *supra* note 217, at 1858; Thomas W. Merrill, *Property and the Right To Exclude*, 77 NEB. L. REV. 730, 730-31 (1998); Henry E. Smith, *Exclusion Versus Governance: Two Strategies for Delineating Property Rights*, 31 J. LEGAL STUD. S453, S456 (2002).

219. See *infra* notes 221-30 and accompanying text.

220. See Robert C. Ellickson, *Two Cheers for the Bundle-of-Sticks Metaphor, Three Cheers for Merrill and Smith*, 8 ECON J. WATCH 215, 218-19 (2011) (analyzing Merrill and Smith's work—while offering certain “[f]riendly” critiques).

221. See LEHAVI, CONSTRUCTION, *supra* note 213, at 39-41 (discussing the third-party applicability of property rights).

That said, in rem rights and duties need not have a single content regardless of the type of asset that is the object of property rules or the identity of owners and different categories of non-owners. As long as sufficient clarity, transparency, and publicity can be achieved in articulating certain variations across the system of property for different types of assets and/or different types of owners—including private versus public owners—property law can maintain its essential structural traits without succumbing to a single substantive blueprint that cannot be normatively defended.

Thus, for example, the fair use doctrine in copyright law substantially limits the copyright owner's right to exclude others—in a manner that does not exist for other types of intellectual property such as patents or other types of assets such as land.²²² This substantive variation derives from normative considerations that address the balance between incentivizing creators of certain content, such as musical, literary, or architectural works, to innovate and enrich the world, and the public interest in allowing non-owners to use such content at a certain scope and for certain purposes such as education, thus also distinguishing between different categories of non-owners.²²³

Accordingly, the identity of the owner can also lead legal systems to design certain varieties in property law doctrines. In particular, the rules for public ownership may somewhat diverge from those for private ownership without undermining property law's general structural features. For example, the common law "public trust doctrine," which originated in England and developed in the United States during the nineteenth century—by which the government holds certain types of assets in trust for the public—may place certain limits on the public owner but also certain stronger entitlements vis-à-vis non-owners, as compared with private owners of the same kind of asset.²²⁴

222. See, e.g., Neil Weinstock Netanel, *Making Sense of Fair Use*, 15 LEWIS & CLARK L. REV. 715, 719-20 (2011) (looking at the doctrine's recent historical development and arguing that it offers significant consistency and determinacy).

223. See *id.* at 719-20, 724.

224. See generally MOLLY SELVIN, *THIS TENDER AND DELICATE BUSINESS: THE PUBLIC TRUST DOCTRINE IN AMERICAN LAW AND ECONOMIC POLICY, 1789-1920* (1987). It should be noted that while the public trust doctrine could also apply, at least in some U.S. jurisdictions, to privately-owned assets such as beachfront land, its scope is more limited

Thus, the public trust doctrine limited the ability of state governments, and even more so of local governments, to alienate or otherwise restrict public access to navigable waters and the land submerged under them, and later also to highways and streets, based on the view that the government held such assets merely as its residents' agent.²²⁵ While this doctrine has somewhat changed course during the twentieth century, it still persists in Anglo-American law²²⁶ and has even been reinvigorated over the past few decades, largely due to the work of Joseph Sax,²²⁷ who called to extend the scope of the doctrine and the limits it places on government control over natural resources.²²⁸

At the same time, the rationale by which government holds certain types of assets in trust for its residents has also worked to give it increased protection versus certain types of non-owners. Under common law rules originating in England, adverse possession of land does not run against the government—local, state, or federal.²²⁹ Although this immunity against adverse possession has been somewhat downscaled by some U.S. states, most courts adhere to this rule, reasoning that because government holds the land in trust for all people, the latter should not lose the land because of the negligence of government officials—thus distinguishing public ownership from a private one.²³⁰

Another type of distinction that may be relevant for different types of assets, or different types of owners, concerns the scope of in rem duties. Under the essentialist approach to property discussed above, in rem duties apply chiefly to non-owners, requiring them to exclude themselves from the property of

than for publicly owned assets. See JESSE DUKEMINIER & JAMES E. KRIER, *PROPERTY* 816-23 (5th ed. 2002).

225. Schanzenbach & Shoked, *supra* note 129, at 585-87.

226. *Id.* at 594-95.

227. See Joseph L. Sax, *The Public Trust Doctrine in Natural Resource Law: Effective Judicial Intervention*, 68 MICH. L. REV. 471, 474 (1970).

228. See Michael C. Blumm & Zachary A. Schwartz, *The Public Trust Doctrine Fifty Years After Sax and Some Thoughts on Its Future*, 44 PUB. LAND & RES. L. REV. 1, 1-4 (2021).

229. DUKEMINIER & KRIER, *supra* note 224, at 102.

230. *Id.* at 103.

others.²³¹ What about in rem duties that apply to owners? According to Merrill and Smith, in rem duties of property owners, such as the duty of a landowner to refrain from carrying out a nuisance activity, are very limited in scope and always “negative.”²³² However, as Robert Ellickson notes, this approach is oversimplified.²³³ As a matter of current doctrine, “[t]he law may affirmatively require a landowner, for example, to control natural vegetation or to contribute to the costs that an abutting neighbor has incurred to fence a common boundary.”²³⁴ Ellickson’s approach is based mostly on the information costs theory advocated by Merrill and Smith by suggesting that many of the “affirmative duties of owners are similarly based on the likelihood that they have special knowledge” about a certain asset and its potential impact on other parties.²³⁵

More importantly, such a narrow approach ignores a growing number of normative arguments made by authors such as David Lametti,²³⁶ Gregory Alexander,²³⁷ and Joseph Singer,²³⁸ by which property owners also owe certain affirmative duties toward other members of society. Even if a legal system does not embrace a comprehensive set of affirmative duties across property law, it may be justified to do so for particular types of

231. See *supra* text accompanying notes 214-16.

232. Merrill & Smith, *The Property/Contract Interface*, *supra* note 217, at 788-89.

233. Ellickson, *supra* note 220, at 220.

234. *Id.* (citations omitted).

235. See Robert C. Ellickson, *The Affirmative Duties of Property Owners: An Essay for Tom Merrill*, 3 BRIGHAM-KANNER PROP. RTS. CONF. J. 43, 52 (2014). Thus, when a municipality requires landowners to shovel snow from abutting sidewalks, it may be justified to do so because “[t]he owner of a lot knows best, for example, which of its shrubs can best withstand a pile of deposited snow” and also because the owner, who frequently uses the abutting sidewalk, is more incentivized to perform the task well. *Id.* at 56.

236. See David Lametti, *The (Virtue) Ethics of Private Property: A Framework and Implications*, in NEW PERSPECTIVES ON PROPERTY LAW, OBLIGATIONS AND RESTITUTION 39, 66 (Alastair Hudson ed., 2004) (discussing the ethical aspects of property law and arguing that “private property will have to be seen to be as much about duties and goals as it is about rights”).

237. See GREGORY S. ALEXANDER & EDUARDO M. PEÑALVER, AN INTRODUCTION TO PROPERTY THEORY 80-97 (2012) (developing a social-obligation norm in property law, one that seeks to promote “human flourishing” that would enable all individuals to live lives worthy of human dignity, and analyzing the corresponding obligations on asset owners that should facilitate this).

238. See Joseph William Singer, *Democratic Estates: Property Law in a Free and Democratic Society*, 94 CORNELL L. REV. 1009, 1048 (2009) (arguing that property owners owe a duty of “attentiveness” toward other members of society).

assets or categories of owners. For example, patent law in the various legal systems requires patent applicants, as a condition for obtaining a patent, to disclose the content of the invention such that non-owners, including for that matter scientific or professional competitors, would be able to use it once the patent expires—meaning that the (temporal) in rem right of exclusive use is balanced by imposing an in rem duty that seeks to serve not only the interests of other innovators/manufacturers but also those of the public at large.²³⁹ Such an affirmative duty placed on the owner of the patent derives, therefore, from the particular normative balance regarding the creation, access, and use of this type of asset—and it can be designed in a manner that does not undermine the structural traits of proprietary rights and duties.

Accordingly, affirmative in rem duties can be designed for certain categories of owners, while also considering that different categories of non-owners may have a particular normative claim for a correlative right vis-à-vis such owners. In the context of city-owned assets in an age of cross-border urbanism, such in rem duties may be owed not only to residents but also to affected non-residents.²⁴⁰ This should be the case with data aggregated by the city about movement patterns or other pieces of information that are derived from persons who move in and around the city, whether they are residents or non-residents. Recognizing a principled proprietary right for a city to assemble, use, and monetize such data should be conditioned on establishing affirmative in rem duties on it. This means that beyond a general in rem duty to make use of such data to promote the general normative goals for which cities should operate, the city should have a particular in rem duty toward all actual and potential subjects of raw data to make sure that the aggregated data remains anonymized and is not being “reverse-engineered” against such persons.²⁴¹

239. See Lisa Larrimore Ouellette, *Do Patents Disclose Useful Information?*, 25 HARV. J.L. & TECH. 545, 546-50, 554 (2012) (offering an empirical analysis of the scope of use in such revealed information and calling to expand the duty).

240. This approach also shows the advantage that the in rem rights/duties conceptual framework has over a “fiduciary” model that is in principle restricted to the local government’s residents. See Schanzenbach & Shoked, *supra* note 129, at 585-86.

241. See *supra* notes 95-103, 192-93 and accompanying text.

Therefore, establishing a system of in rem rights and in rem duties that would apply to assets owned or controlled by cities in an age of cross-border urbanism need not undermine the basic features of prevailing property law concerning different types of assets but should be finetuned to account both for the specific features of cities, as compared with private owners on the one hand and national governments on the other, and for assets that exhibit particular traits when operating in the urban context—such as the type of data collected, used, and monetized in smart cities.²⁴²

What this means, on the side of in rem rights, is that cities should be entitled to exert their property rights in assets to require different categories of users to internalize the marginal costs and benefits they place on such assets. To the extent that the mode of governance of a certain asset is not governed by statutory law or regulatory provisions deriving from an upper-level government, the city should be generally at liberty to introduce cost-internalization mechanisms such as quota-setting, sorting, and pricing, as long as such criteria are transparent and consistent. Therefore, to the extent that such mechanisms differentiate between categories of users, including for that matter between residents and non-residents, the city should be able to justify such distinctions by demonstrating how each such category of users contributes differently to the acquisition and maintenance of assets (including by payment of local taxes) and/or how such category of users imposes a different scope or type of costs on the asset. In managing an asset that it owns or controls,²⁴³ a city should be granted the legal power to do so in a differential and creative manner.

At the same time, the city should also be subject to a general, affirmative in rem duty that has special merit in an age of cross-border urbanism. The city should own, manage, and utilize its assets in a way that promotes both intra-local and inter-local openness, tolerance, and diversity, based on the normative

242. *See supra* Sections I.C, II.C.

243. For the argument that property rights are a management tool, meaning that property law should facilitate effective management, see Lynda L. Butler, *Property as a Management Institution*, 82 BROOK. L. REV. 1215, 1222 (2017).

analysis outlined in Section III.A.²⁴⁴ What this means, in more concrete terms, is that cities should generally abstain from engaging in outright exclusion of non-residents from city assets, or from other rules that have the practical effect of keeping out underprivileged locals or the general category of non-residents, if such rules cannot be grounded in cost-internalization (notwithstanding the self-standing normative merit in subsidizing or promoting vertical equity). Cities should make sure that they remain generally open and inclusive in both theory and practice.

The same type of balance between in rem rights and in rem duties should also apply to the ability of the city to create, acquire, or assemble types of assets that are derived, at least to some extent, from its governance power or actual control over the city's physical and digital spaces. This is particularly so in the case of data that is aggregated, among other things, from surveillance cameras, sensors, automatic meter reading, and other tools placed or operating in its territory.²⁴⁵

While the anticommons analysis presented in Section II.C above²⁴⁶ can justify the city's right to transform indefinite pieces of raw (and personal) data into an integrative asset of aggregated and anonymized data—one that may aid it in its governance capacities but that could also be monetized—such an in rem right must be accompanied by significant in rem duties. Beyond the general duty of the city to use such an asset in line with the general purposes that it should promote, including for that matter intra-local and inter-local openness, it also owes an affirmative in rem duty to all past, present, and future persons that are the sources of the raw data.²⁴⁷ Such a duty should hold the city liable against any misuse of the aggregated data—whether it is done by the city itself or by third parties with which the city is transacting in collecting, processing, or monetizing the data.²⁴⁸ Thus, an infringement of privacy concerning the raw and personal piece of data should be viewed as infringing also an in rem right that the subject of data has vis-à-vis the city that collected it.

244. See *supra* notes 197, 205-08 and accompanying text.

245. See *supra* notes 88-99 and accompanying text.

246. See *supra* notes 188-91 and accompanying text.

247. See *supra* notes 197, 205-06, 239-41 and accompanying text.

248. See *supra* notes 196-200 and accompanying text.

CONCLUSION

Cities today face a growing number of challenges but also prospects for change that could help them to move forward and enable them to function effectively and innovatively as hubs for economic, technological, and interpersonal exchange in the twenty-first century. Going beyond a previously limited group of “global cities” or “international cities,” many cities in developed, emerging, and developing economies must address the effects of the constant movement of goods, capital, services, and persons across national and international borders, alongside the dramatic effects of digital technology and other innovations that defy both geographical borders and any attempt at neat divisions between local, national, and international matters. However, political institutions and arrangements do not follow up on such developments so quickly, if at all. The result is one of an “urban governance gap,” a term that refers to the growing disparity between the traditional mandate of cities in national legal systems and the current reality of cities, which requires them to address not only thematic issues that have been traditionally left to other levels of government but also a growing scope of everyday activities that involve non-residents.²⁴⁹

This Article argued that many aspects of the governance mismatch embedded in the cross-border nature of urban life can be addressed through a reconsideration of the role of cities’ property rights in assets, both tangible and intangible ones.²⁵⁰ A reconfiguration of the in rem rights and in rem duties that cities should have regarding assets they own or control would not simply take us back to the pre-modern era of cities as “associations” or chartered enclaves.²⁵¹ Rather, articulating the broad-based normative goals that cities should promote is not only instrumental in assessing how they perform in the governance capacities they possess under the relevant legal systems, but it could also be of key importance in identifying proprietary rights and duties in regard to city assets so as to make

249. *See supra* Part I.

250. *See supra* Part II.

251. *See supra* notes 20, 33-41 and accompanying text.

sure that the urban governance gap will not leave cities unable to act effectively.²⁵² This is the case in regard to physical assets, such as local infrastructure used by both residents and non-residents, as well as digital assets—such as the aggregated data that cities are increasingly collecting about everyday action patterns of both residents and non-residents.²⁵³

The normative case for allowing cities to exert their property rights in assets in a differential and creative manner to effectively address their cross-border reality is particularly strong when cities remain otherwise committed to promoting intra-local and inter-local openness, diversity, and tolerance. The multiple dimensions of cross-border activities taking place in cities today attest to their key role as a forum for inter-local and international mobility, exchange, and heterogeneity²⁵⁴—meaning that any normative or doctrinal reconsideration of the array of in rem rights and in rem duties that cities should have in regard to assets must preserve these essential traits of urban life.

252. *See supra* Part III.

253. *See supra* Section II.B., C.

254. *See supra* Sections I.A, III.A.