

Charting the Recent Past: Digital Analysis for a Historiography of Modern Architecture



Mapiranje recentne
prošlosti: digitalna analiza
za historiografiju moderne
arhitekture

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SAŽETAK

Moderna arhitektura dugi se niz godina povezivala s radom sudionika Međunarodnog kongresa moderne arhitekture (CIAM), dok su se njezini narativi uglavnom oblikovali iz zapadnoeuropske perspektive. Tako su mnoge građevine i autori tog razdoblja ostali izostavljeni, a kasniji razvoj modernizma diljem svijeta tek se kratko spominje u pregledima povijesti arhitekture objavljenima nakon Drugog svjetskog rata. Iako su temeljna djela iz povijesti moderne arhitekture već analizirana tradicionalnim kvalitativnim metodama, sada ih se može mnogo detaljnije ispitati kvantitativnim skeniranjem s pomoću digitalnih alata.

Cilj ovog članka jest digitalnim alatima analizirati kako su kanonski pregledi povijesti moderne arhitekture perpetuirali europocentričnu pristranost, i to mapiranjem autora, građevina i lokacija u bazu podataka, kako bi se prikazala geografska neravnoteža koju oni podrazumijevaju. Ta će digitalna kartografija otkriti koje su regije zanemarivane ili prekomjerno zastupljene, dovodeći u pitanje trenutačni historiografski narativ naglašavanjem transnacionalnih i transgeografskih pristupa. Nadalje, pokušat će dati odgovore na sljedeća istraživačka pitanja: Kako je moderna arhitektura predstavljena u kanonskim pregledima povijesti arhitekture? Koje su zemlje, autori i građevine zanemareni? Kako su lokalne povijesti moderne arhitekture uključene u uzastopna izdanja kanonskih pregleda povijesti arhitekture?

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ABSTRACT

Modern architecture has been shaped and described through a series of books that have attempted to outline its history almost from the beginning of the twentieth century. These books have built the shifting canon of modern architecture, which should now be put into perspective by analyzing its historiography. While this has been done by qualitative methods, our research aims to examine the canonical texts on modern architecture through quantitative methods and digital tools to add a new layer to traditional historiographical readings. Focusing on the texts published since World War II, this paper compares in detail the seminal books by Sigfried Giedion, Bruno Zevi, Leonardo Benevolo, Reyner Banham, Charles Jencks, Kenneth Frampton, William Curtis and Alan Colquhoun to determine with objective data how modern architecture has been represented, which architects and buildings have been left out of these descriptions and the extent to which these narratives have increasingly incorporated local histories to provide readers with a more nuanced account of modernism.

KEYWORDS

modern architecture, historiography, history of architecture, digital humanities

DIGITAL ART HISTORY | DIGITALNA POVIJEST UMJETNOSTI

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Kao dio istraživačkog projekta *Mapping Global Architectural Histories on Modernism*, ovaj se članak fokusira na na izdanja objavljena od početka Drugog svjetskog rata. Koristeći se ključnom publikacijom *The Historiography of Modern Architecture* Panayotisa Tournikiotisa kao polazištem, u članku su odabrani najprikladniji naslovi i dodani drugi povijesni pregledi objavljeni nakon 1968., što je bio krajnji datum Tournikiotisova istraživanja. Stoga je prva faza projekta bila usredotočena na povijesti moderne arhitekture koju su napisali Sigfried Giedion (1941.), Bruno Zevi (1950.), Leonardo Benevolo (1960.), Reyner Banham (1960.), Charles Jencks (1972.), Kenneth Frampton (1980.), William Curtis (1982.) i Alan Colquhoun (2002.). Podaci prvobitno prikupljeni iz tih knjiga uvršteni su u tablicu u Excelu kako bi se evidentiralo koje su građevine, arhitekti i lokacije spomenuti u sastavljanju tih povijesti. Zemljopisne koordinate građevina i projekta također su uključene u tablice kao pomoć u njihovu geolociranju na GIS karti, omogućujući bolje filtriranje navedenih informacija i pomažući u vizualizaciji specifičnih parametara i njihove prostorne distribucije. U vrlo naprednoj fazi razvoja, uskoro će biti dostupni na internetu za istraživače.

Osim toga, tablice su prenesene u grafikone koji prikazuju odabire svakog od autora u vezi s građevinama i arhitektima odabranima u navedenim prikazima razdoblja. Ti grafikoni također pomažu vizualizirati vremenski okvir koji svaki autor povezuje s modernom arhitekturom. Dok prema Sigfriedu Giedionu taj okvir obuhvaća razdoblje od renesanse do 60-ih godina 20. stoljeća, za Charlesa Jencksa jedva pokriva razdoblje od kraja Prvog svjetskog rata do naftne krize ranih 70-ih. Kad je riječ o geografskom opsegu ovih povijesti, grafikoni potvrđuju kako Europa i, u manjoj mjeri, Sjeverna Amerika zauzimaju najveći dio ovih narativa, obuhvaćajući od 60 % do ponekad više od 75 % građevina spomenutih u svakoj od knjiga.

Od 80-ih godina 20. stoljeća poduzeti su određeni napori kako bi se ocrtala pluralnija povijest moderne arhitekture, a autori poput Kennetha Framptona znatno su proširili opseg svojih sjećanja u kasnijim izdanjima svojih djela. Ipak, perspektiva kroz koju se arhitektura proučava ostala je u osnovi ista. Unatoč kontinuiranoj raspravi o tome kako bi se trebala pisati globalna povijest moderne arhitekture, čak ni novije knjige objavljene u prvim desetljećima 21. stoljeća nisu uspjele izbjeći europocentričnu pristranost. Posebno je upečatljivo kako se čini da se povijesti moderne arhitekture nadovezuju jedna na drugu, održavajući kanon. Prikazivanjem kvantitativnih podataka o tim pristranostima, cilj je ovog istraživanja da pomogne u isticanju novoga historiografskog pravca koji tek treba konsolidirati.

KLJUČNE RIJEČI

moderna arhitektura, historiografija, povijest arhitekture, digitalna humanistika

CHARTING THE RECENT PAST : DIGITAL ANALYSIS FOR A HISTORIOGRAPHY OF MODERN ARCHITECTURE

Modern architecture was traditionally identified by the output of participants in the Congrès Internationaux d'Architecture Moderne (CIAM) conferences. At the same time, its narratives were mainly crafted from a Western European perspective. Thus, many buildings and authors of the period were omitted, while later developments of Modernism worldwide were only briefly addressed in architectural histories published after World War II. While the histories of modern architecture have been analyzed using traditional qualitative methods, they can now be examined in further detail using digital tools for quantitative scanning.

This article aims to employ these new tools to analyze how canonical histories of modern architecture have perpetuated the Eurocentric bias by charting authors, buildings, and locations on a database to show the geographical imbalance that these histories entail. While the Eurocentric bias in the historiography of modern architecture has already been critically addressed by qualitative means, quantitative methods allow for the study of relations between different canonical histories and an exploration of structural reasons that facilitated their construction.¹ This digital survey will further attempt to answer the following research questions: How has modern architecture been represented in the canonical histories of architecture? Which countries, authors and buildings have been overlooked? How have local histories of modern architecture been incorporated into the successive editions of canonical histories of architecture volumes?

This article presents part of the outcome of the research project *Mapping Global Architectural Histories on Modernism*, which was a joint venture between the Universidad Politécnica de Madrid and the Massachusetts Institute of Technology from 2020 to 2022. This research aimed to deliver a detailed quantitative comparison of the canonical histories of modern architecture in order to provide objective data to confirm and illustrate further qualitative analysis. This ongoing analysis will establish which buildings and architects have been identified with modern architecture by different authors. It will enable a more precise definition of what has been understood as modern architecture at different points in time. It also constitutes an attempt to outline which places were central to these narratives and which other geographies have been seen as peripheries. Finally, it will provide an interactive map to better visualize the events, outputs, and agents left out of these canonical accounts. This is expected to pave the way for future, more inclusive histories of global modernisms.

¹

See, among others: Rabat, "The Hidden Hand: Edward Said's Orientalism and Architectural History;" James-Chakraborty, "Beyond Post-Colonialism: New Directions for the History of Nonwestern Architecture;" De la Vega, "Modern to Contemporary: A Historiography of Global Architecture."

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REVISITING THE
HISTORIOGRAPHY OF MODERN
ARCHITECTURE

Digital tools have been increasingly transforming architectural history since the commercialization of personal computers in the 1980s, which made these technologies accessible to a broader public.² In architectural history, digital technologies have provided crucial tools to expand the field. Along with digitalizing the images and other archive materials, 3D modelling now offers the possibility to visualize lost architectural objects or restitution hypotheses with a high degree of realism.³ Digital mapping and geoinformation systems (GIS) have helped gain a better understanding of urban structures and landscapes, point-cloud techniques have facilitated building surveys and made more precise drawings of existing buildings, while virtual reality has enhanced and enabled the spatial experience of long-lost structures.⁴ But beyond these visualization techniques, the potential of text-mining⁵—already used in other areas—and data analysis are yet to display their full potential in architectural history. In this regard, text-mining methods are starting to be applied to the study of architectural journals and books, and data analysis can also provide a new perspective to less visual areas of the discipline, such as historiography. The latter is both the aim and medium of this research.

In 1999, Panayotis Tournikiotis published his seminal book *Historiography of Modern Architecture*, in which he compared the histories of modern architecture by Emil Kaufmann (1891–1953),⁶ Nikolaus Pevsner (1902–1983),⁷ Sigfried Giedion (1888–1968),⁸ Bruno Zevi (1918–2000),⁹ Leonardo Benevolo (1923–2017),¹⁰ Henry-Russell Hitchcock (1903–1987),¹¹ Reyner Banham (1922–1988),¹² Peter Collins (1920–1981)¹³ and Manfredo Tafuri (1935–1994).¹⁴ Tournikiotis focused on the texts written between 1932 and 1968, which portrayed modern architecture’s genesis, rise and decline. Although they partly share a common ground—some of the events we associate with modern architecture—they also differ significantly in terms of the architects, buildings and places that sustain their discourse and how their narratives are built. Not even the definition of modern architecture itself is the same for all.

In his book, Tournikiotis provided an analysis of these texts in relation to three different aspects: the historical dimension—the concept of history and the relations between the past, the present and the future; the social dimension—how architecture relates to social change, and the architectonic dimension—the different ways in which a particular position about the essence of architecture is integrated into the text.¹⁵ He did not study these histories in a general or specific context or in their relationship with what was actually built, nor did he focus on their authors.

Some twenty-five years after Tournikiotis’s text was published, many new histories have been written that were not included in his study. It might be time to examine the

historiography of modern architecture with the latest tools and a fresh perspective that also contemplates those histories written after modernism was over.

CHARTING CHRONOLOGY,
GEOGRAPHY, BUILDINGS AND
ARCHITECTS

Following a critical examination of Tournikiotis’s work, some decisions were made concerning the time frame—which now covers the entire twentieth century—and the thematic scope—which has left out those books that do not deal specifically with modern architecture. Thus, Tafuri’s volume—which is a ‘history of architecture’ and not a ‘history of modern architecture’—is no longer part of our survey. The text by Peter Collins has also been excluded since it focuses on the ideals of modern architecture rather than its design output and is thus considered unsuitable for quantitative analysis. At the same time, we have now included more recent histories that portray modern architecture from a certain distance as something that somehow belongs to the past. These are the ones by Charles Jencks (1939–2019),¹⁶ Kenneth Frampton (1930–),¹⁷ William Curtis (1948–),¹⁸ and Alan Colquhoun (1921–2012).¹⁹

The project’s first phase has focused on the volumes written since the outset of World War II, namely the works by Giedion, Zevi, Benevolo, Banham, Frampton, Curtis, Colquhoun and Jencks. Data was initially collected using an Excel chart to record which buildings, architects and locations were mentioned to build up those histories. Column and area graphs were generated from the Excel spreadsheet to analyze the information in each book, as well as a GIS map showing the geolocation of buildings and projects. Both display systems will allow for better filtering of this information and help visualize specific parameters and their spatial distribution. For this purpose, the single book charts have been merged into one comprehensive chart to help combine data and visualize results in graphs portraying different variables of each history. This will, in turn, help identify any under- or over-represented issues that should be addressed in future accounts of the period.

The first general analysis focused on chronology, geography, buildings and architects. The dates of the buildings found in the individual books give an idea of the time frame each author identifies with modern architecture. When compared, these timelines, and especially their starting dates, vary greatly (Fig. 1). Giedion’s account spans the most extended period by far. It starts in the early 1400s, in line with the more recent global history of architecture published by Kathleen James-Chakraborty.²⁰ However, the end date was pushed forward in the successive editions Giedion wrote until he died in 1968. Most notably, the second edition (1949) incorporated a chapter on Alvar Aalto; the work of Gropius in the USA and Le Corbusier’s buildings since 1938 were

- 2 Hopkins, "Digital Humanities 1981–2021, a Personal Timeline."
- 3 See, among others: Frommel, Gaiari, Garagnani, "3-D Digital Modelling and Giuliano de Sangallo’s Designs for Santa Maria delle Carceri in Prato."
- 4 See, among others: Chiabrando, Loturco, Santagati, "Digital Invasions: from Point-Clouds to Historical Building Object Modelling of a UNESCO World Heritage Site."
- 5 See its application to the study of architectural journals in: Esteban Maluenda, Sánchez Carrasco and San Pedro Moreno, "ArchiText Mining: Applying Text Analytics to Research on Modern Architecture."
- 6 Kaufmann, *Von Claude-Nicolas Ledoux bis Le Corbusier: Ursprung und Entwicklung der Autonomen Architektur*.
- 7 Pevsner, *Pioneers of the Modern Movement from William Morris to Walter Gropius*.
- 8 Giedion, *Space, Time and Architecture: The Growth of a New Tradition*.
- 9 Zevi, *Storia dell’architettura moderna*.
- 10 Benevolo, *Storia dell’architettura moderna*.
- 11 Tournikiotis compared three books by Hitchcock: *The International Style: Architecture since 1922; Modern Architecture: Romanticism and Reintegration and Architecture: Nineteenth and Twentieth Centuries*, although he focused mainly on the latter.
- 12 Banham, *Theory and Design in the First Machine Age*.
- 13 Collins, *Changing Ideals in Modern Architecture 1750–1950*.
- 14 Tafuri, *Teorie e storia dell’architettura*.
- 15 Tournikiotis, *The Historiography of Modern Architecture*, 14.
- 16 Jencks, *Modern Movements in Architecture*.
- 17 Frampton, *Modern Architecture: A Critical History*.
- 18 Curtis, *Modern Architecture since 1900*.
- 19 Colquhoun, *Modern Architecture*.
- 20 James-Chakraborty, *Architecture since 1400*.

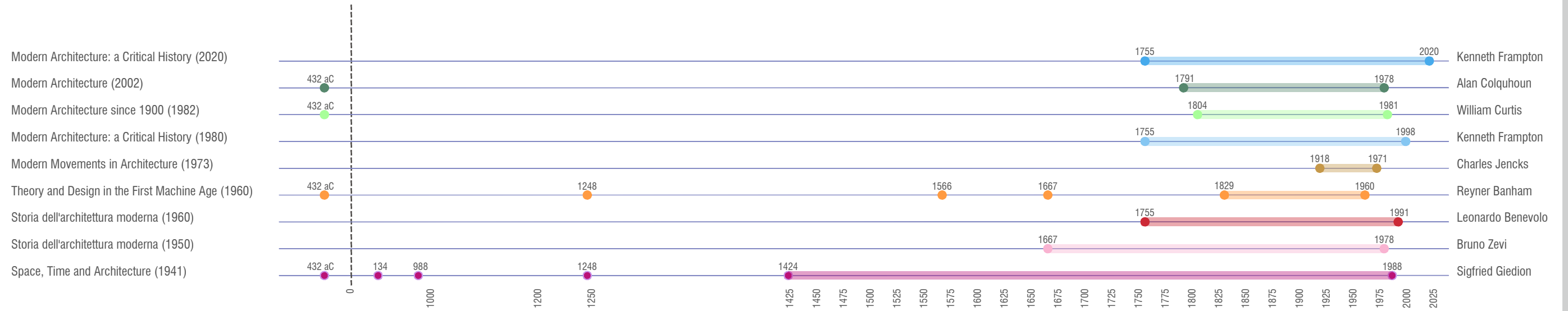


Fig. / Sl. 1 Timespan of architecture covered in each analysed book. Source: *Mapping Global Architectural Histories on Modernism*. Author: Laura Sánchez Carrasco. / Vremenski raspon arhitekture koja se razmatra u pojedinom djelu. Izvor: *Mapping Global Architectural Histories on Modernism*. Autorica: Laura Sánchez Carrasco.

examined in its third edition (1954), while the fifth edition (1967) also featured a chapter on Jørn Utzon and the third generation of modern architects. Zevi's report starts two centuries later, while the histories by Frampton, Benevolo and Colquhoun link the origin of modern architecture to the cultural, scientific and productive changes introduced by the Industrial Revolution during the second half of the eighteenth century. The new materials and building types — especially Chicago's high-rise buildings — during the last part of the 19th century are the starting point of Curtis' and Banham's narratives. The essay by Jencks is exceptionally brief, spanning from World War I to the oil crisis in the early 1970s.

Within these time frames, each author has emphasized different periods. The importance of a specific year or decade for one particular author can be identified by recording the buildings with the most mentions in each book. According to the charts, the Palace of Versailles is the most mentioned building in Giedion's book, followed closely by the Rockefeller Center, the Unité d'Habitation and the Sidney Opera House. Equally, the Bauhaus building and the Villa Savoye are included within a larger group that is mentioned less frequently than the squares in Bloomsbury (Fig. 2a). Zevi's love for organic architecture is reflected in the fact that a third of his most-mentioned buildings are by Frank Lloyd Wright. As a practicing architect, he also favored recent projects, so that approximately half of his book's most frequently discussed designs belong to post-war architecture (Fig. 2b). Benevolo offers the most comprehensive account of all, with 25 buildings being included at least five times (Fig. 2c). Banham favors German structures from the early decades of the twentieth century (Fig. 2d), while Curtis shows his preference for Le Corbusier by including ten of his buildings among those mentioned more than five times (Fig. 2e). That is also the case in Frampton's book. It should be noted that some of them are discussed in far more detail in the fourth edition (2020), which significantly expanded on the original format (Fig. 2f). As for Jencks, only three buildings are mentioned five times or more: the Unité d'Habitation, the Liverpool Cathedral, by Frederick Gibberd, and the Church in Imatra, by Alvar Aalto (Fig. 2g). When all this data is merged into a single chart, its peaks show a certain degree of consensus in identifying modern architecture with certain buildings, notably the Villa Savoye, the Bauhaus headquarters in Dessau, the plan for Chandigarh, the Unité d'Habitation and the Crystal Palace. Buildings appearing more than 20 times in total show how the construction of Crystal Palace in 1851 put architecture on a new course, which fully unfolded in the 1920s and experienced a rebound after World War II, with the urban plans for Chandigarh and Brasilia before Modernism became a more pluralistic panorama (Fig. 2h).

As for the geographical distribution of buildings and projects, the Eurocentric bias is quite explicit in subsequent graphs. Banham virtually ignored non-European architecture and even paid scant attention to North American works

before he moved to the USA, where he became one of Los Angeles' greatest advocates (Fig. 3a).²¹ Something similar had occurred with Zevi a few years earlier, barely featuring South America through Le Corbusier's Errázuriz House in Chile, and Asia through Frank Lloyd Wright's Imperial Hotel in Japan (Fig. 3b). Giedion, Benevolo and Colquhoun somewhat reduced the presence of European examples — to around 75% — to allow for a greater presence of North American projects — between 15% and 20% — and a few mentions of architecture in Africa, mainly represented by Le Corbusier's Plan for Algier, with Oceania virtually epitomized through Sidney's Opera House by Utzon, and South America, featuring more designs from Brazil, mainly in Colquhoun's book (Fig. 3c, 3d and 3e). The lion's share of Africa's and Asia's representation is through the work of Western architects in these countries, with minimal representation of local practitioners.

The later histories written by Frampton and Curtis devote more attention to Africa and present a more nuanced vision of Asia by going slightly beyond the buildings by Western architects in Japan and India (Fig. 3f and 3g). In this regard, Frampton's revised and extended 5th edition, published in 2020, has made a significant effort to include many more non-European countries and architects, although European examples still make up for over half of the book (Fig. 3h).

Collectively, the aggregated results of all books present a revealing image of the historiography of modern architecture, in which North American buildings only start being taken into account at the end of the nineteenth century and have more weight after World War II. Subsequently, architecture from other continents started sharing the scene with Europe, albeit in still very unbalanced terms (Fig. 3i).

The authors' origins and education explain in part this distortion. Starting with Giedion, he wrote his PhD in Munich under Wölfflin's guidance, but he soon grew close to the Bauhaus movement and its representatives, especially Walter Gropius, whom he joined at Harvard during his Norton Lectures, the starting point of his book. Frampton, Curtis, Colquhoun and Banham are all British architects who profited from the intense academic exchange between Britain and the United States that followed World War II, gravitating around the universities that had welcomed European modernists after the rise of Hitler and fascism. Crossing the Atlantic in the opposite direction, American-born Charles Jencks graduated from Harvard before obtaining his PhD under Reynier Banham in Britain. As for the Italian authors in this study, being a Jew forced Bruno Zevi to leave Italy and study in Britain, although ultimately, he graduated from Harvard, which explains his enthusiasm for Frank Lloyd Wright. Boasting the least international of all biographies, Leonardo Benevolo studied and worked in Italy, providing the most multifaceted account of modern architecture in his survey, thanks to incorporating national experts in many of its editions.

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Banham, *Los Angeles: The Architecture of Four Ecologies*.

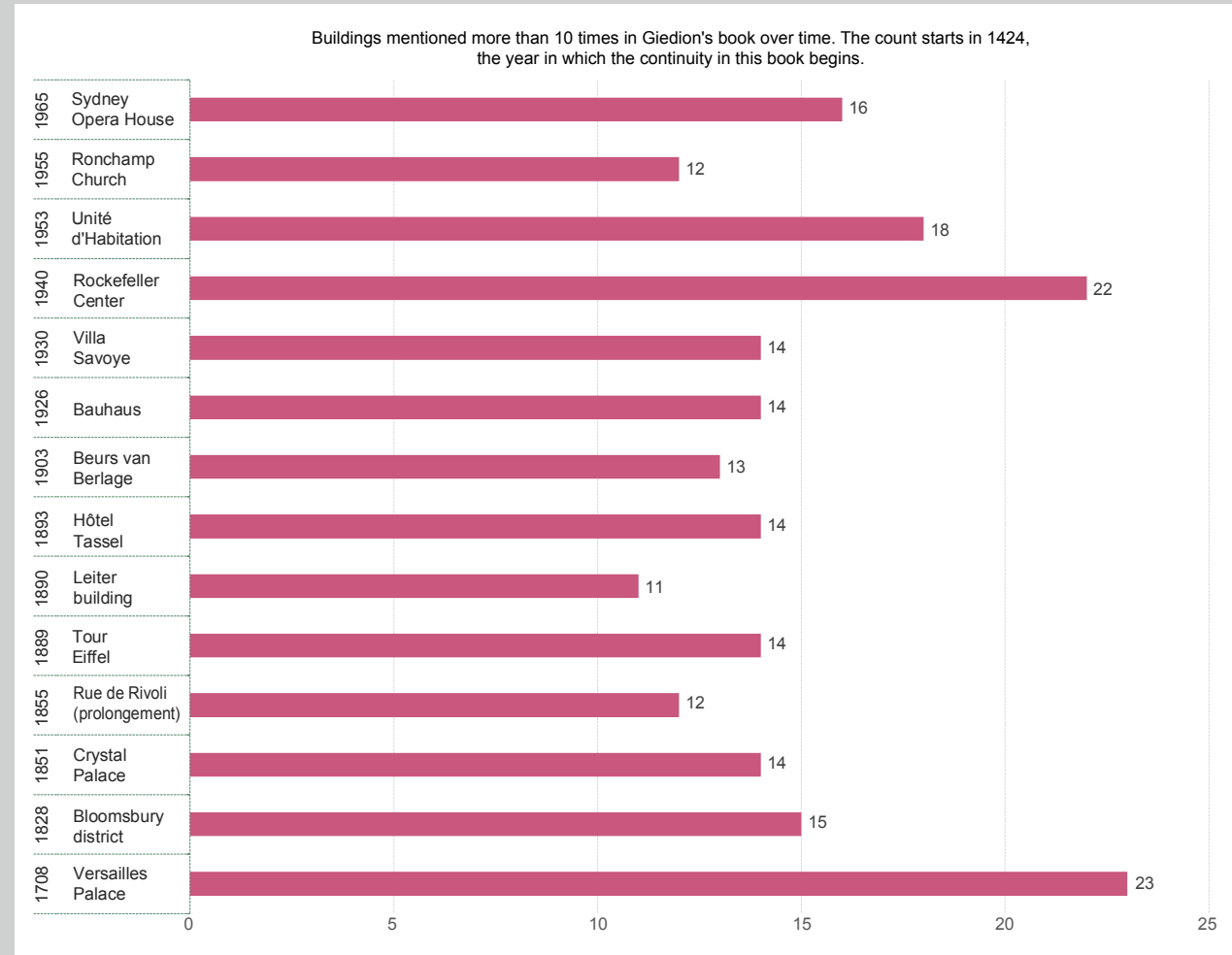


Fig. / Sl. 2a Most mentioned buildings in each book. Source: *Mapping Global Architectural Histories on Modernism*. Author: Laura Sánchez Carrasco. / Najčešće spominjane zgrade u pojedinom djelu. Izvor: *Mapping Global Architectural Histories on Modernism*. Autorica: Laura Sánchez Carrasco / **Sigfried Giedion, *Space, Time and Architecture* (1941).**

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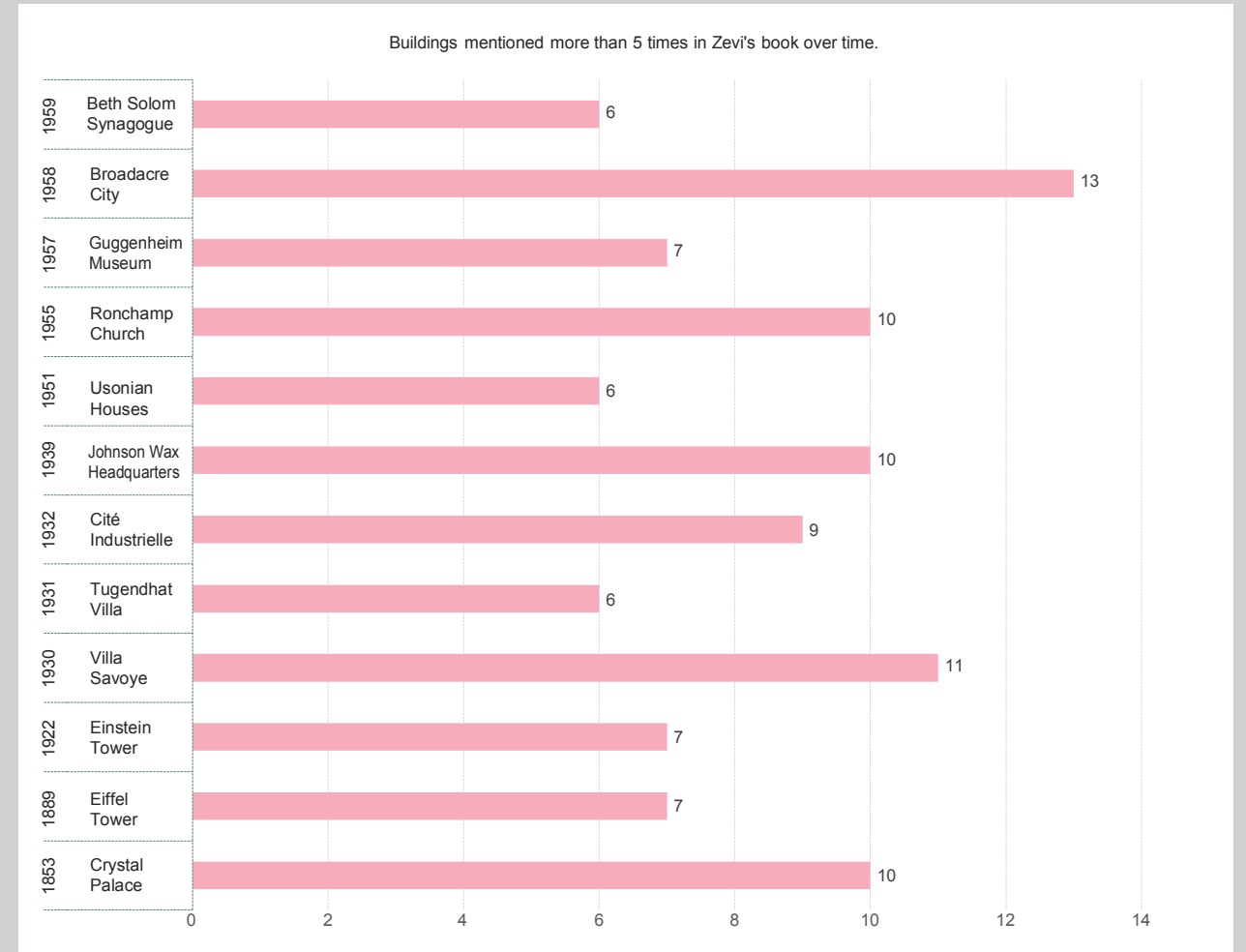


Fig. / Sl. 2b Most mentioned buildings in each book. Source: *Mapping Global Architectural Histories on Modernism*. Author: Laura Sánchez Carrasco. / Najčešće spominjane zgrade u pojedinom djelu. Izvor: *Mapping Global Architectural Histories on Modernism*. Autorica: Laura Sánchez Carrasco / **Bruno Zevi, *Storia dell'architettura moderna* (1950).**

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DIGITAL ART HISTORY | DIGITALNA POVIJEST UMJETNOSTI

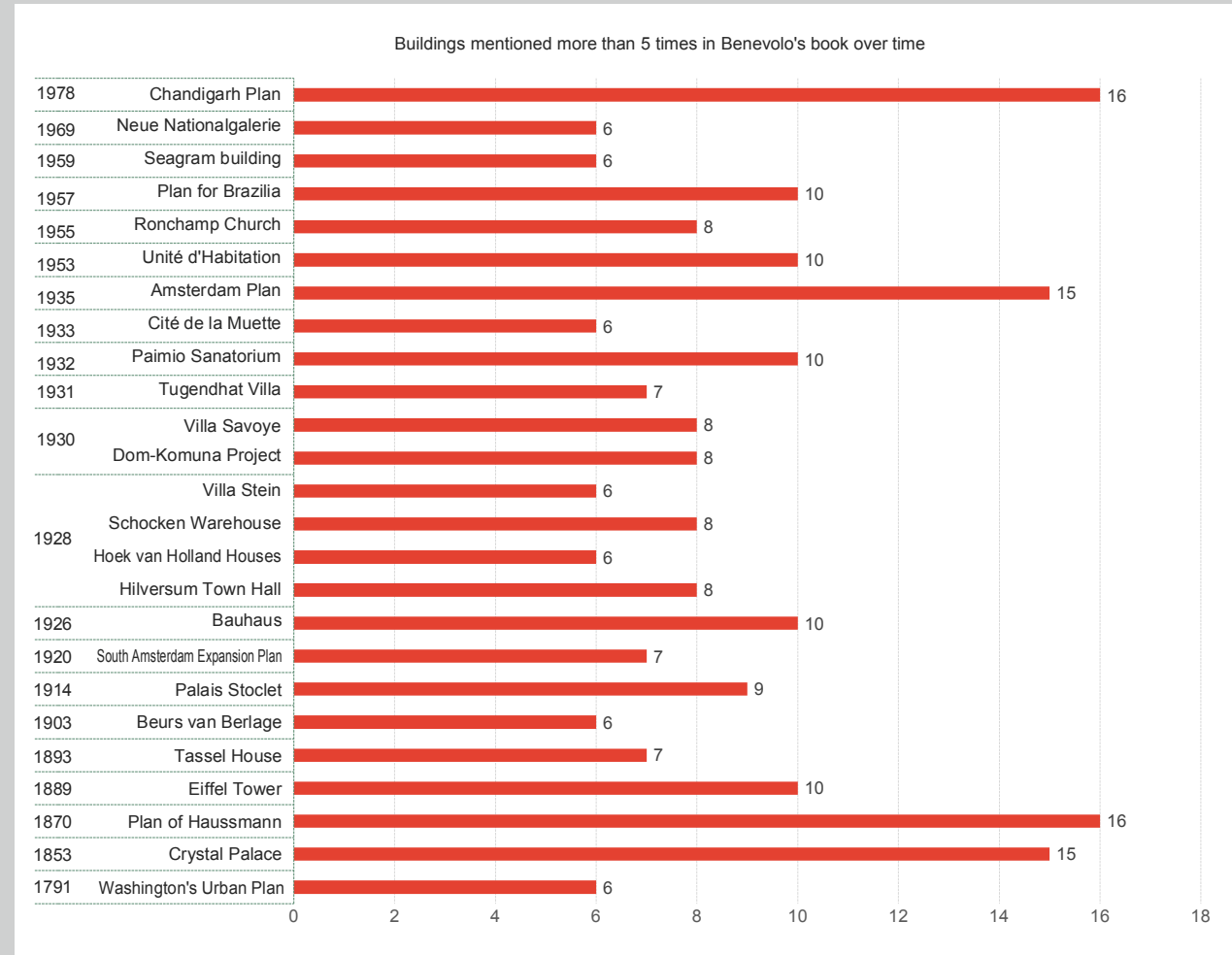


Fig. / Sl. 2c Most mentioned buildings in each book. Source: *Mapping Global Architectural Histories on Modernism*. Author: Laura Sánchez Carrasco. / Najčešće spominjane zgrade u pojedinom djelu. Izvor: *Mapping Global Architectural Histories on Modernism*. Autorica: Laura Sánchez Carrasco / **Leonardo Benevolo, *Storia dell'architettura moderna* (1960).**

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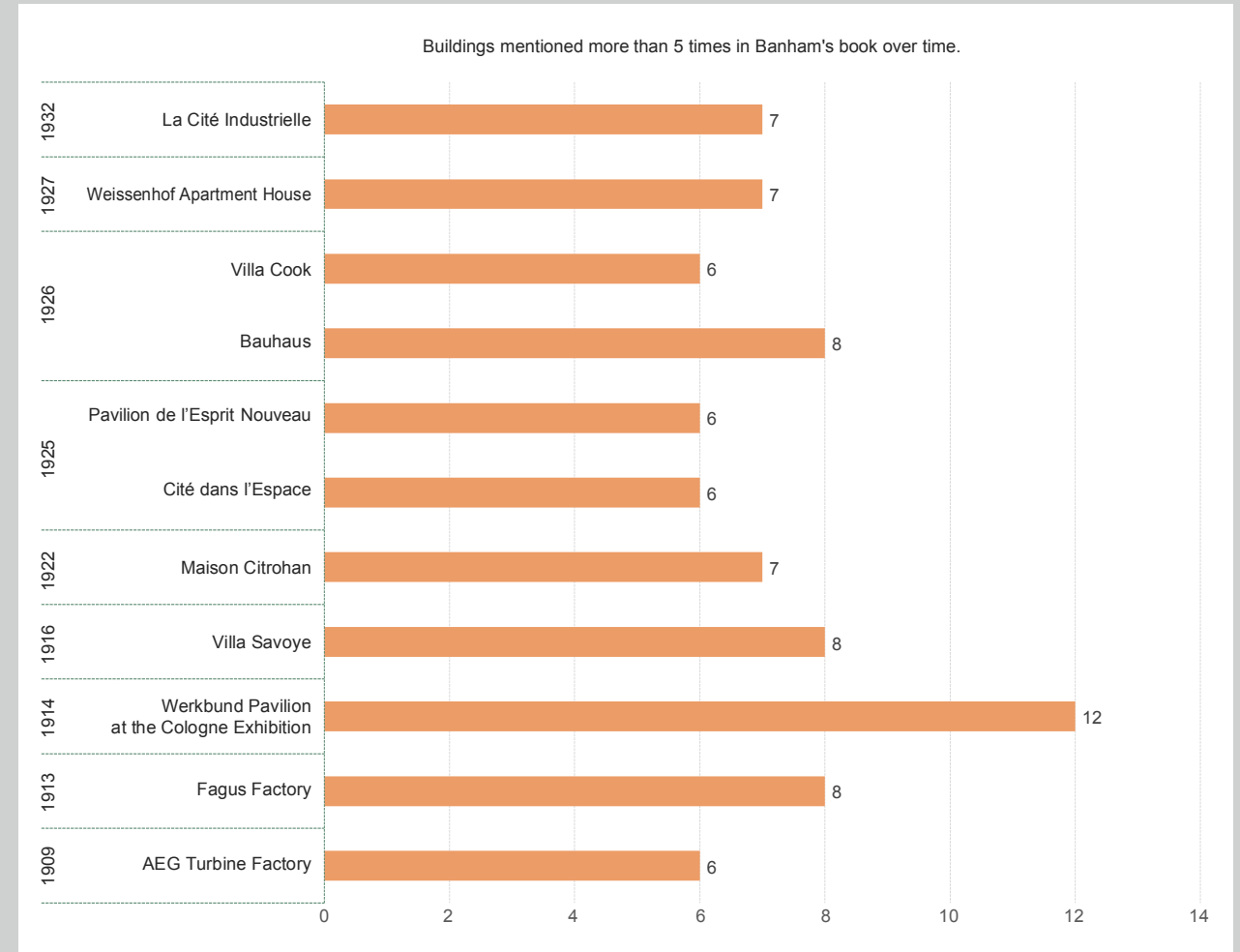


Fig. / Sl. 2d Most mentioned buildings in each book. Source: *Mapping Global Architectural Histories on Modernism*. Author: Laura Sánchez Carrasco. / Najčešće spominjane zgrade u pojedinom djelu. Izvor: *Mapping Global Architectural Histories on Modernism*. Autorica: Laura Sánchez Carrasco / **Reyner Banham, *Theory and Design in the First Machine Age* (1960).**

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DIGITAL ART HISTORY | DIGITALNA POVIJEST UMJETNOSTI

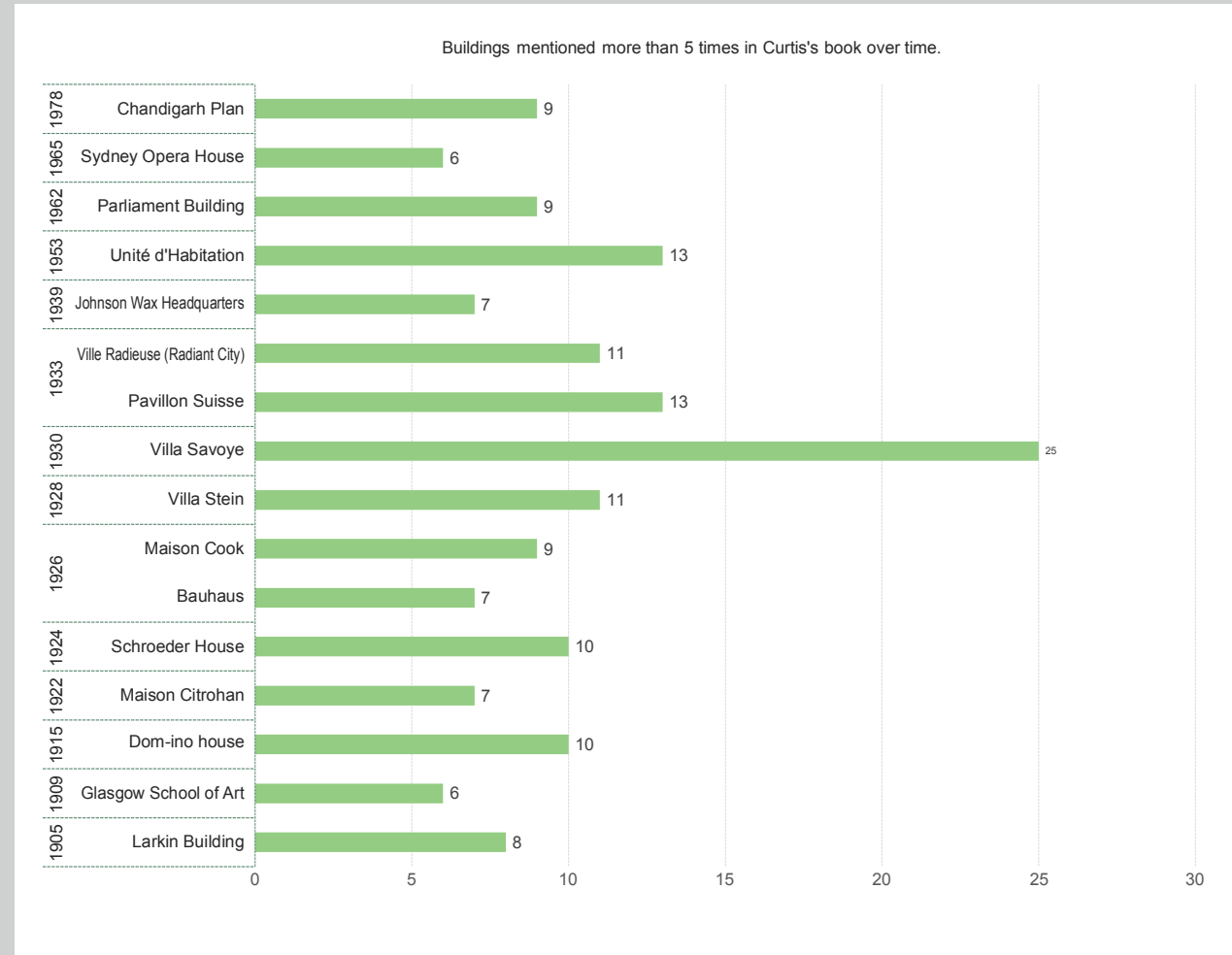


Fig. / Sl. 2e Most mentioned buildings in each book. Source: *Mapping Global Architectural Histories on Modernism*. Author: Laura Sánchez Carrasco. / Najčešće spominjane zgrade u pojedinom djelu. Izvor: *Mapping Global Architectural Histories on Modernism*. Autorica: Laura Sánchez Carrasco / **William Curtis, *Modern Architecture since 1900* (1982).**

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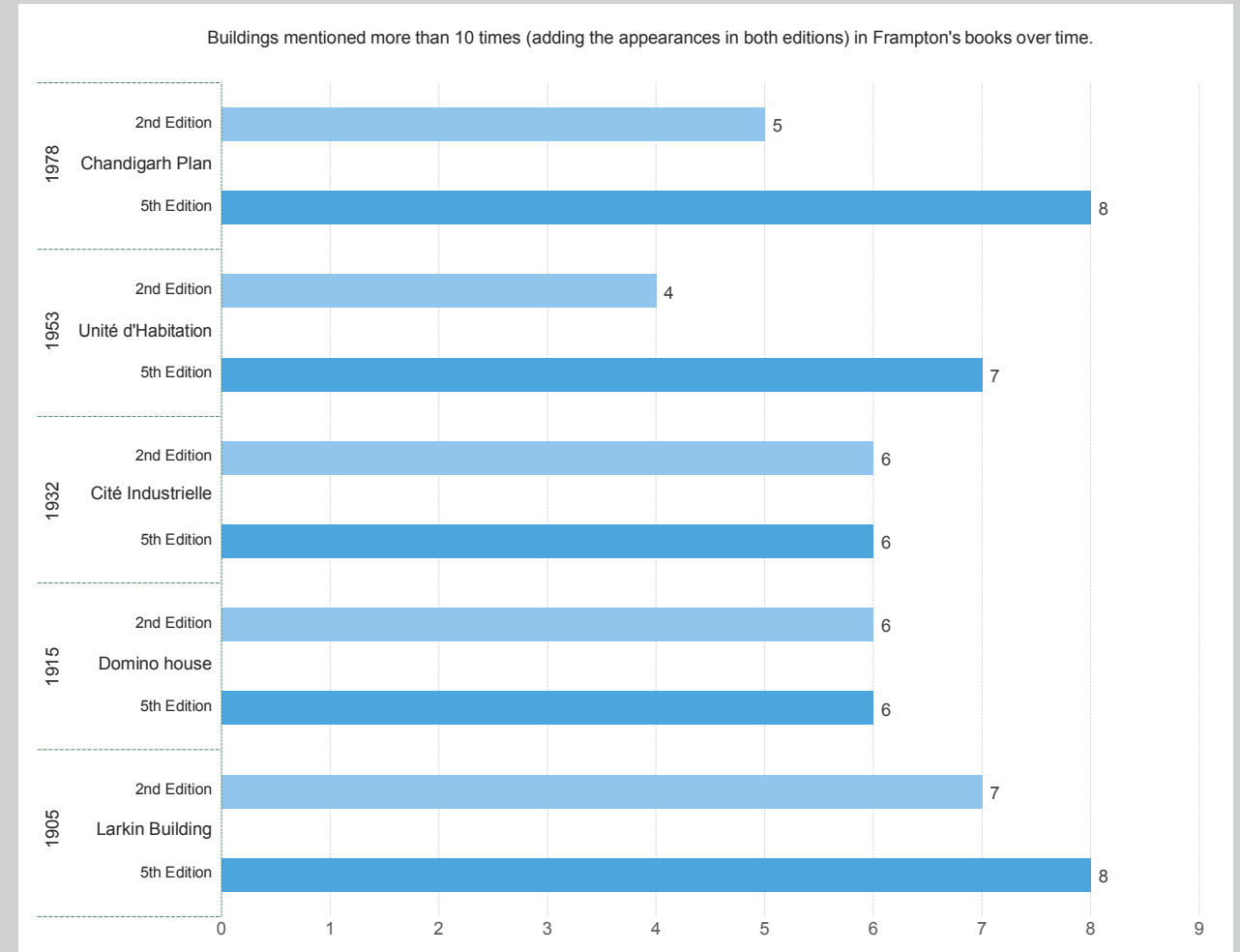


Fig. / Sl. 2f Most mentioned buildings in each book. Source: *Mapping Global Architectural Histories on Modernism*. Author: Laura Sánchez Carrasco. / Najčešće spominjane zgrade u pojedinom djelu. Izvor: *Mapping Global Architectural Histories on Modernism*. Autorica: Laura Sánchez Carrasco / **Kenneth Frampton, *Modern Architecture: A Critical History* (2020).**

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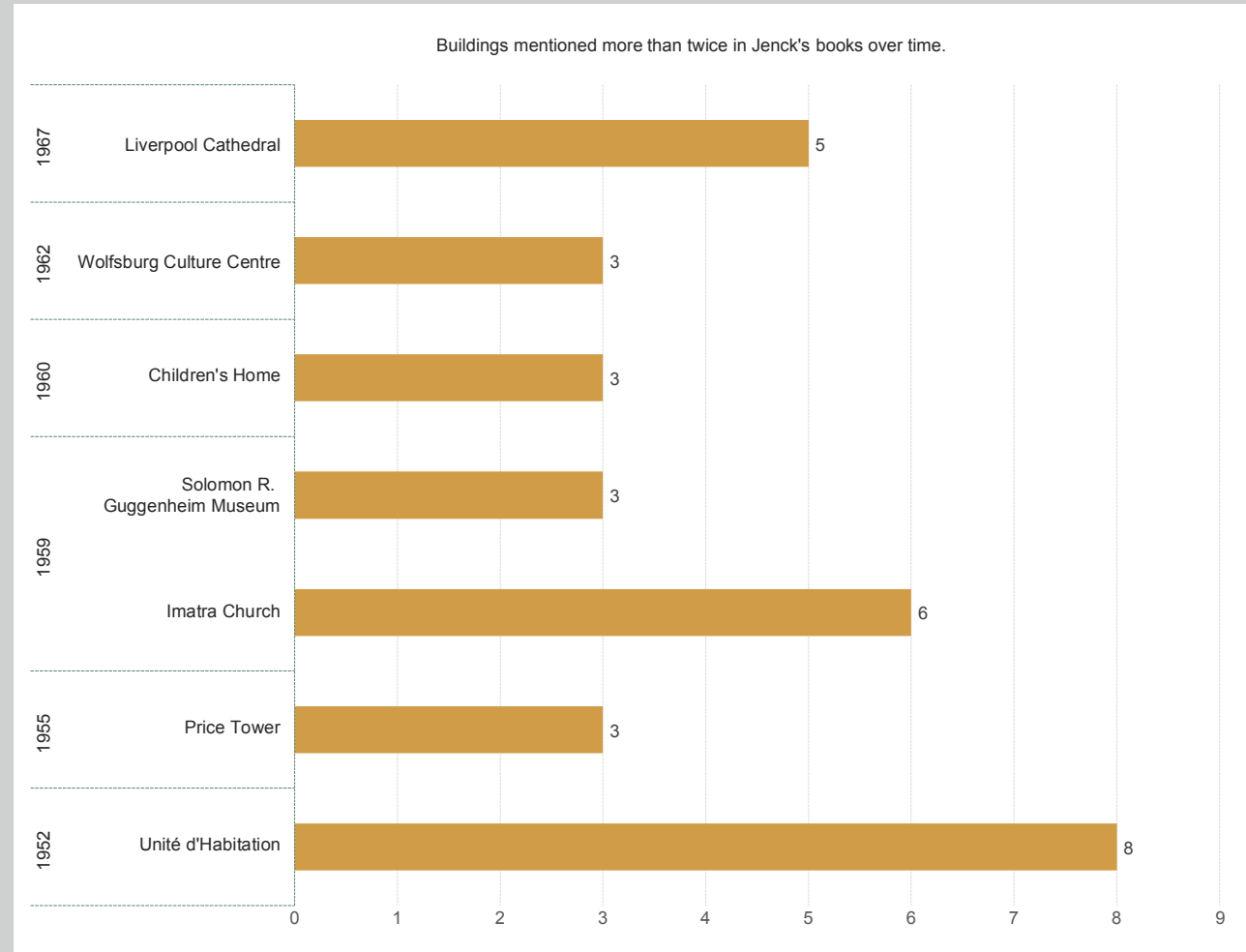


Fig. / Sl. 2g Most mentioned buildings in each book. Source: *Mapping Global Architectural Histories on Modernism*. Author: Laura Sánchez Carrasco.
 / Najčešće spominjane zgrade u pojedinom djelu. Izvor: *Mapping Global Architectural Histories on Modernism*. Autorica: Laura Sánchez Carrasco
 / **Charles Jencks, *Modern Movements in Architecture* (1973).**

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DIGITAL ART HISTORY | DIGITALNA POVIJEST UMJETNOSTI

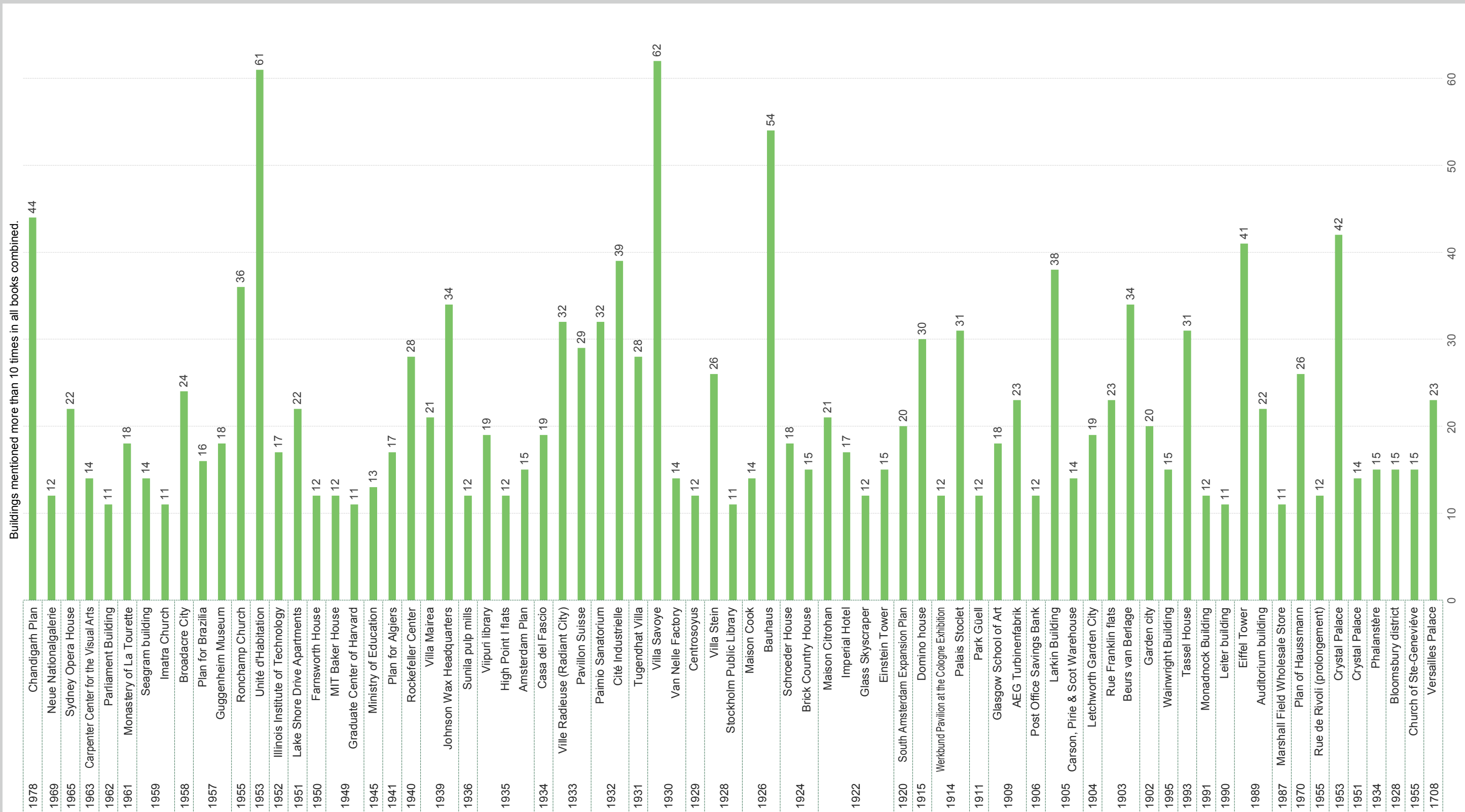


Fig./Sl. 2h Most mentioned buildings in the analysed books (in total). Source: Mapping Global Architectural Histories on Modernism. Author: Laura Sánchez Carrasco. /
 Najčešće spominjane zgrade u analiziranim djelima (ukupno). Izvor: Mapping Global Architectural Histories on Modernism. Autorica: Laura Sánchez Carrasco. / **Ukupno / In total**

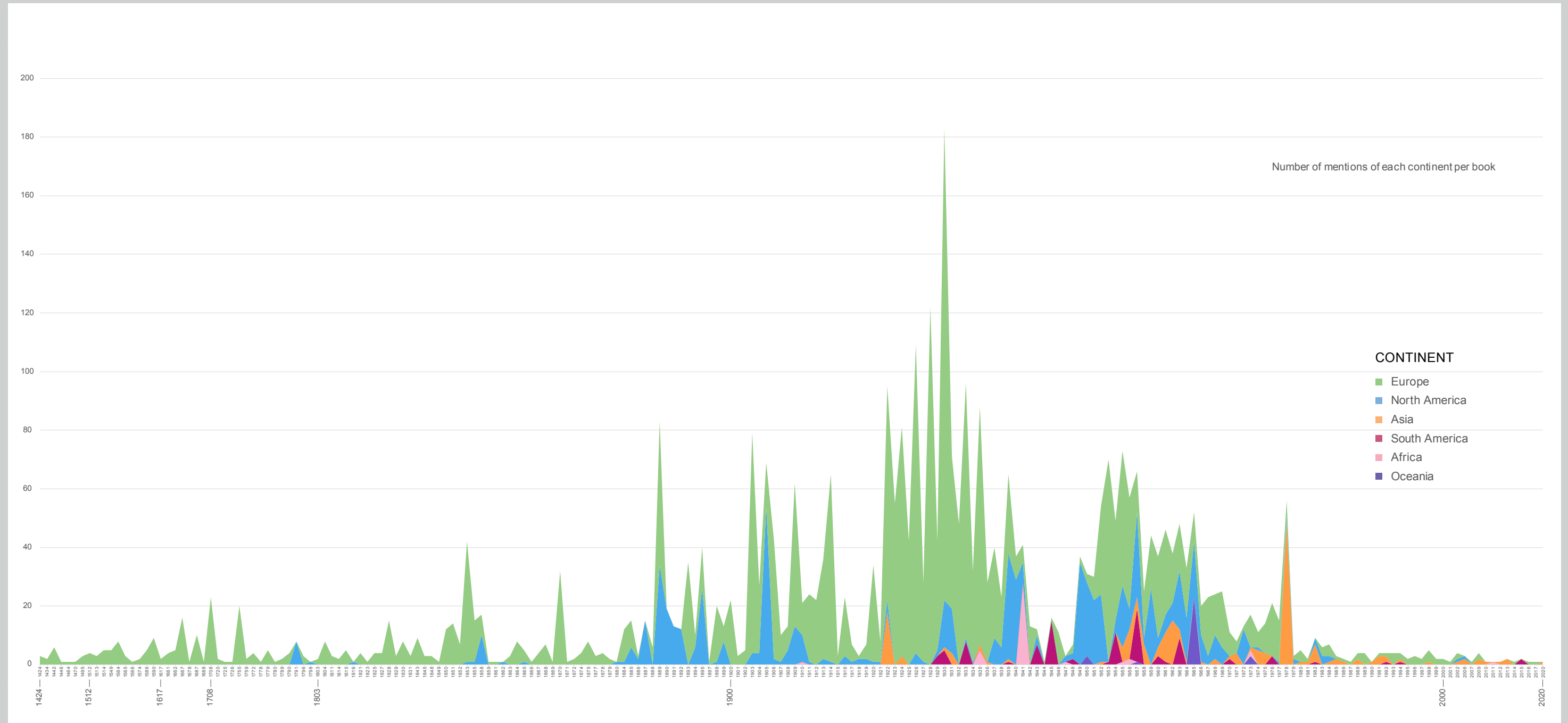


Fig. / Sl. 3 Continents and countries covered in each book and in total.
 Source: *Mapping Global Architectural Histories on Modernism*. Author: Laura Sánchez Carrasco. / Obuhvaćeni kontinenti i zemlje prema pojedinom djelu i ukupno. Izvor: *Mapping Global Architectural Histories on Modernism*. Autorica: Laura Sánchez Carrasco.
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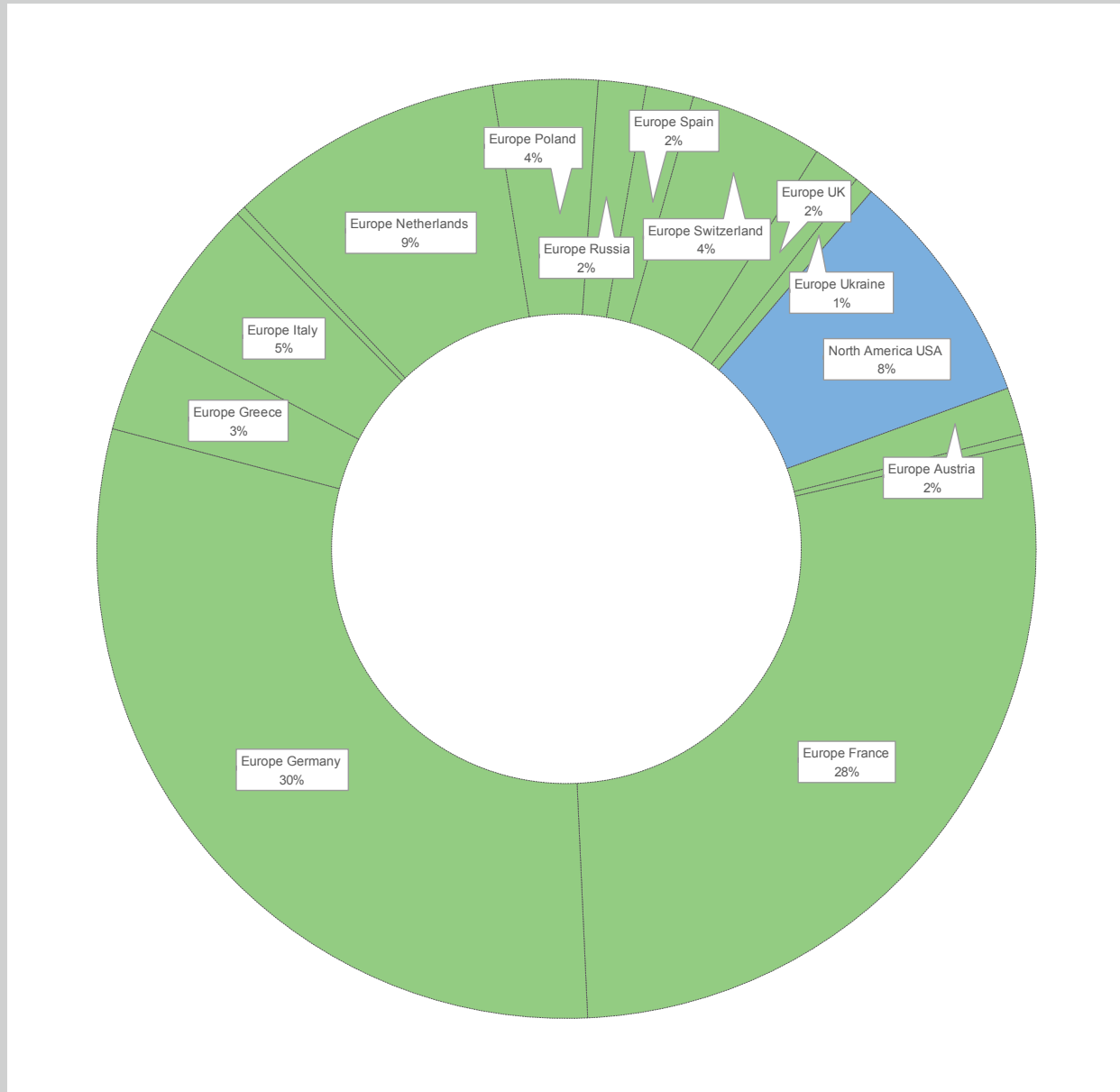


Fig. / Sl. 3a Continents and countries covered in each book and in total. Source: *Mapping Global Architectural Histories on Modernism*. Author: Laura Sánchez Carrasco. / Obuhvaćeni kontinenti i zemlje prema pojedinom djelu i ukupno. Izvor: *Mapping Global Architectural Histories on Modernism*. Autorica: Laura Sánchez Carrasco. / **Reyner Banham, *Theory and Design in the First Machine Age* (1960).**

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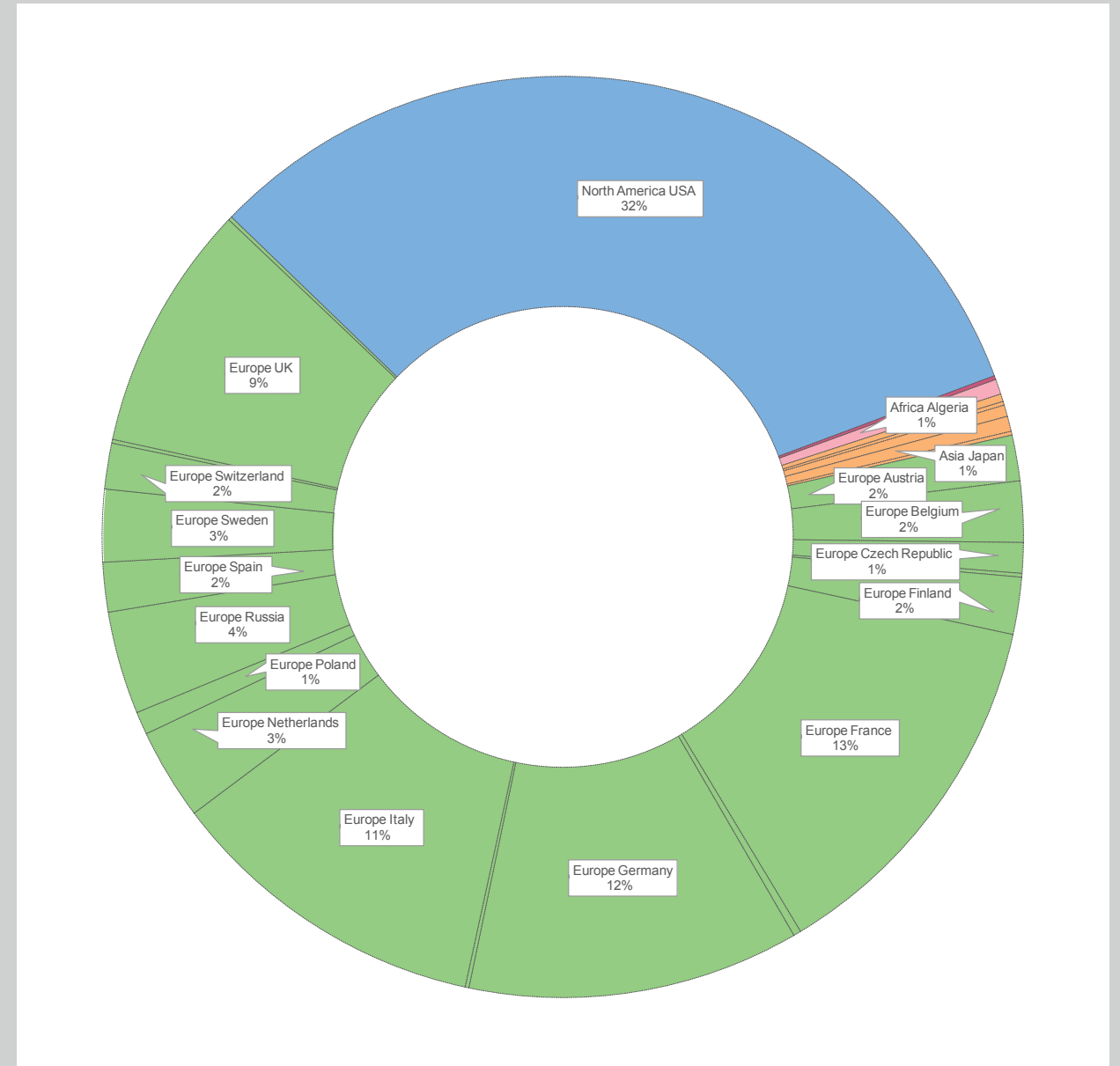


Fig. / Sl. 3b Continents and countries covered in each book and in total. Source: *Mapping Global Architectural Histories on Modernism*. Author: Laura Sánchez Carrasco. / Obuhvaćeni kontinenti i zemlje prema pojedinom djelu i ukupno. Izvor: *Mapping Global Architectural Histories on Modernism*. Autorica: Laura Sánchez Carrasco. / **Bruno Zevi, *Storia dell'architettura moderna* (1950).**

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DIGITAL ART HISTORY | DIGITALNA POVIJEST UMJETNOSTI

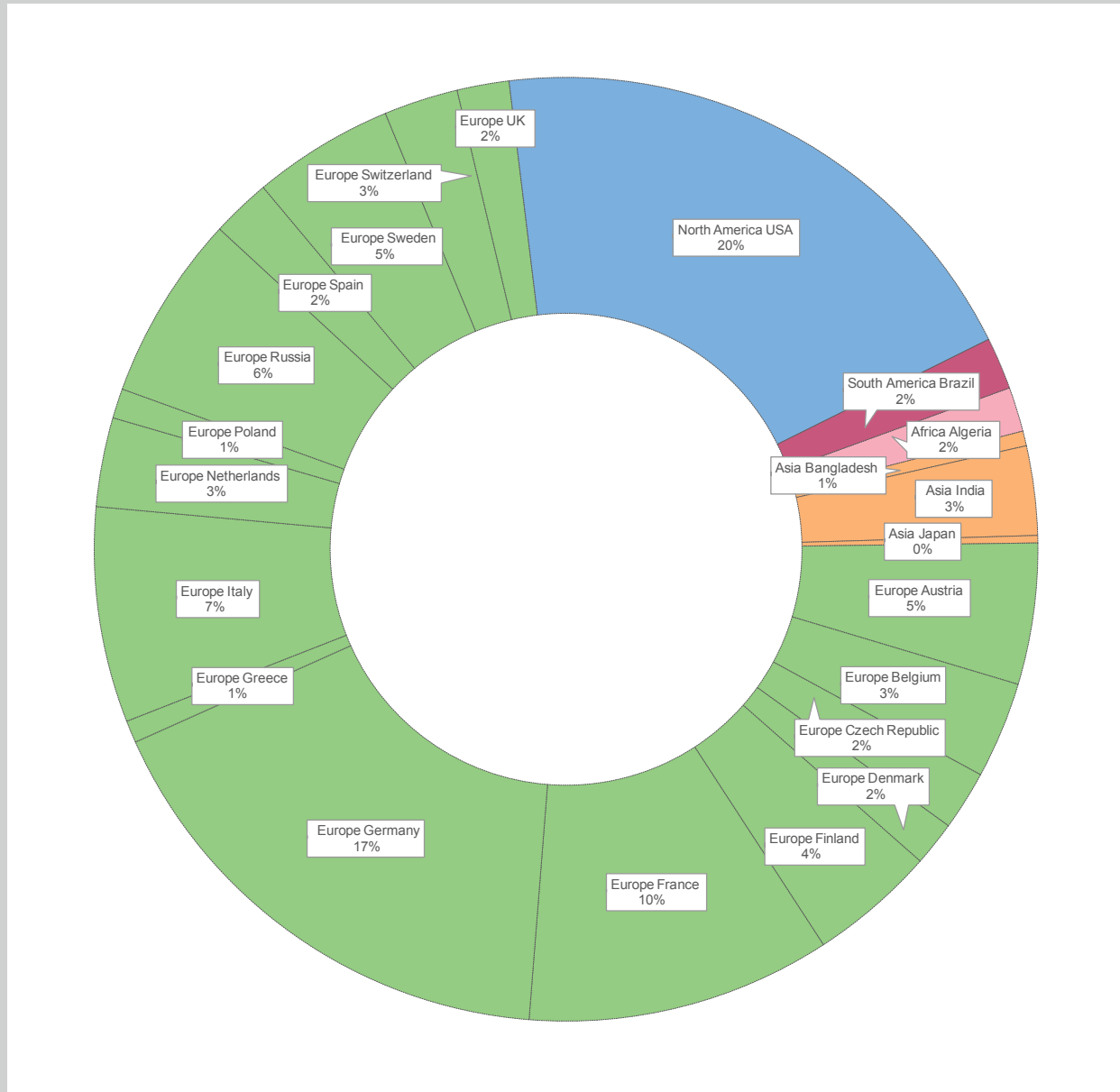


Fig. / Sl. 3c Continents and countries covered in each book and in total. Source: *Mapping Global Architectural Histories on Modernism*. Author: Laura Sánchez Carrasco. / Obuhvaćeni kontinenti i zemlje prema pojedinom djelu i ukupno. Izvor: *Mapping Global Architectural Histories on Modernism*. Autorica: Laura Sánchez Carrasco. / **Alan Colquhoun, *Modern Architecture* (2002).**

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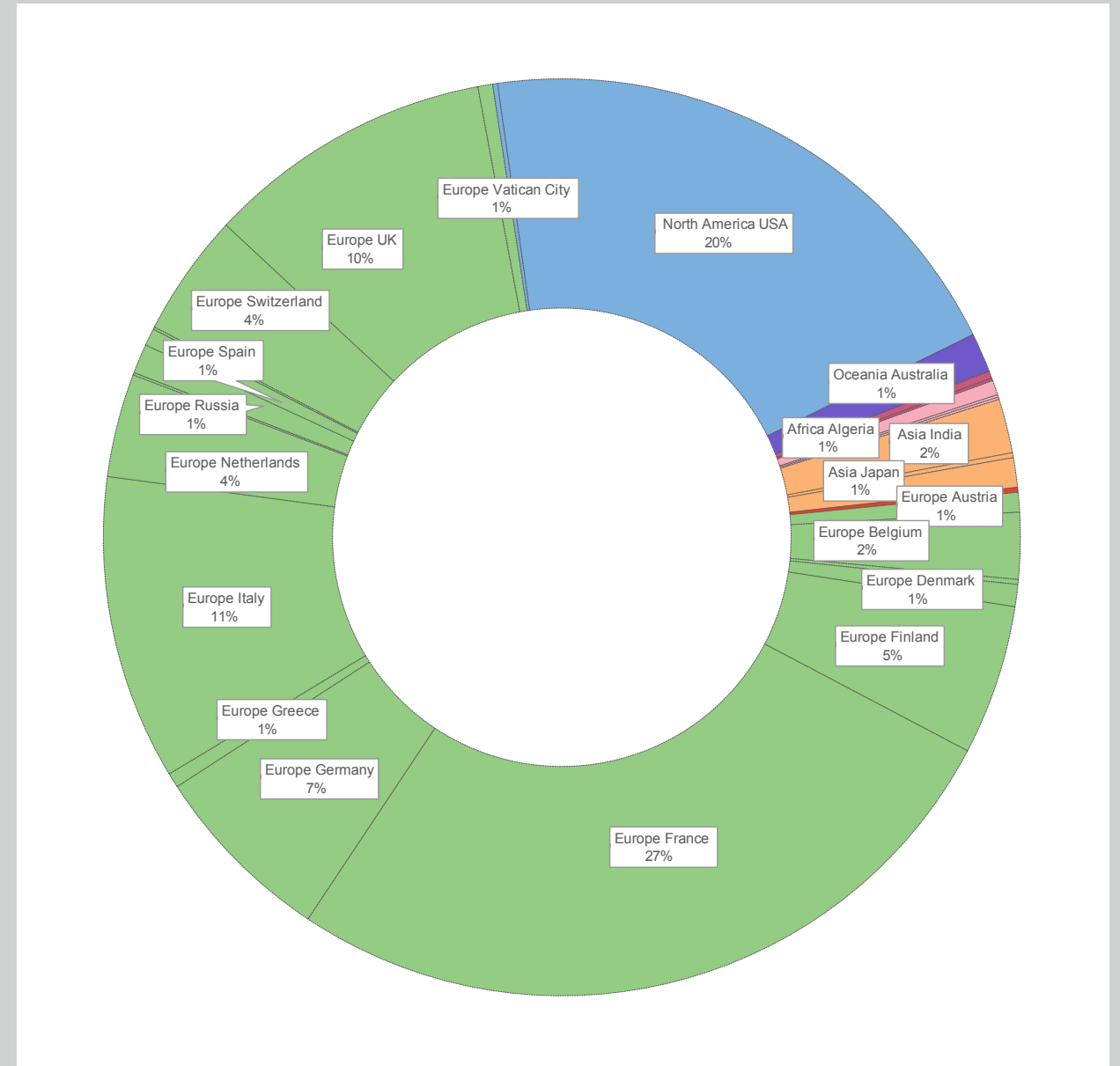


Fig. / Sl. 3d Continents and countries covered in each book and in total. Source: *Mapping Global Architectural Histories on Modernism*. Author: Laura Sánchez Carrasco. / Obuhvaćeni kontinenti i zemlje prema pojedinom djelu i ukupno. Izvor: *Mapping Global Architectural Histories on Modernism*. Autorica: Laura Sánchez Carrasco. / **Sigfried Giedion, *Space, Time and Architecture* (1941).**

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DIGITAL ART HISTORY | DIGITALNA POVIJEST UMJETNOSTI

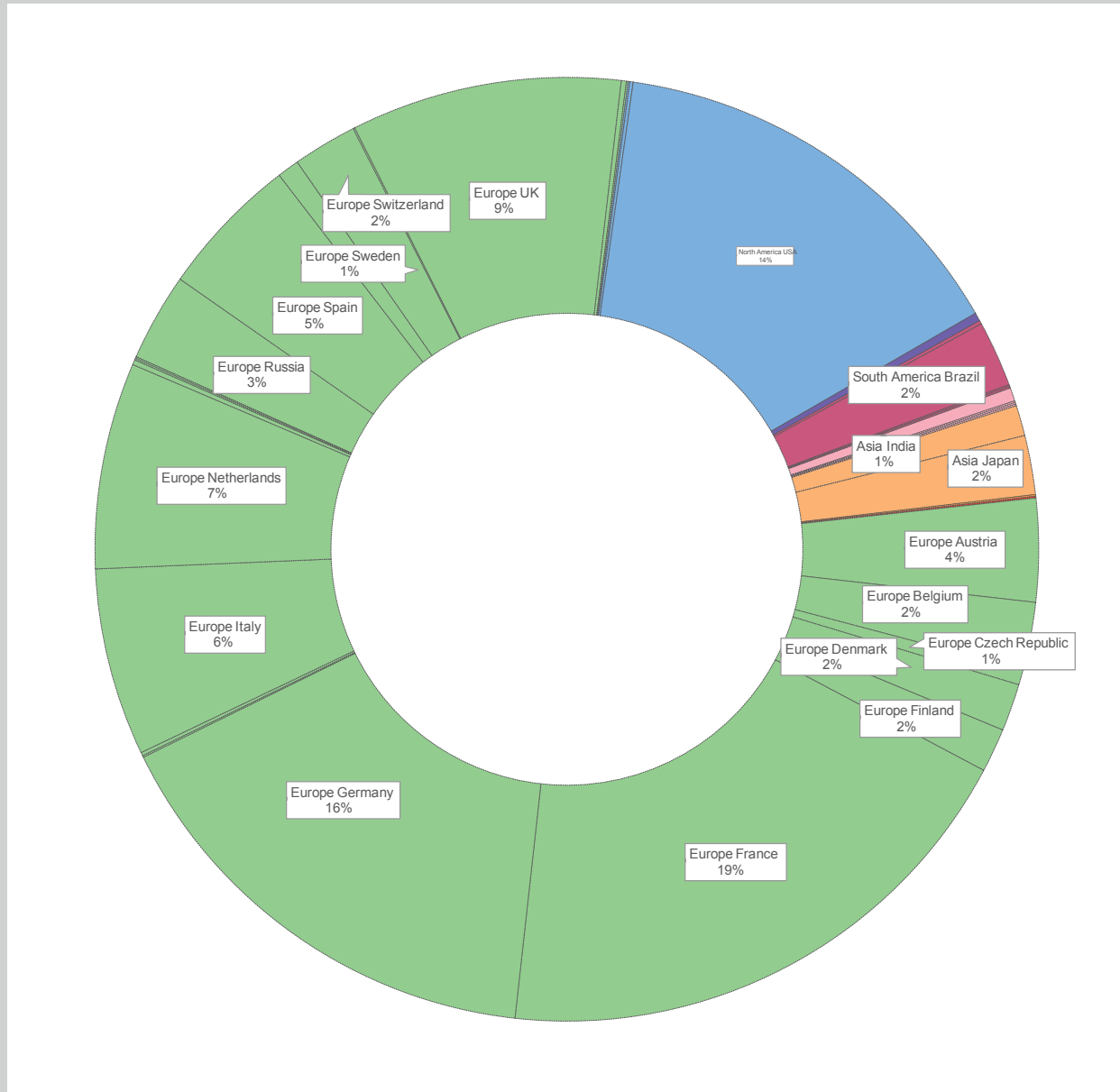


Fig. / Sl. 3e Continents and countries covered in each book and in total. Source: *Mapping Global Architectural Histories on Modernism*. Author: Laura Sánchez Carrasco. / Obuhvaćeni kontinenti i zemlje prema pojedinom djelu i ukupno. Izvor: *Mapping Global Architectural Histories on Modernism*. Autorica: Laura Sánchez Carrasco. / **Leonardo Benevolo, *Storia dell'architettura moderna* (1960).**

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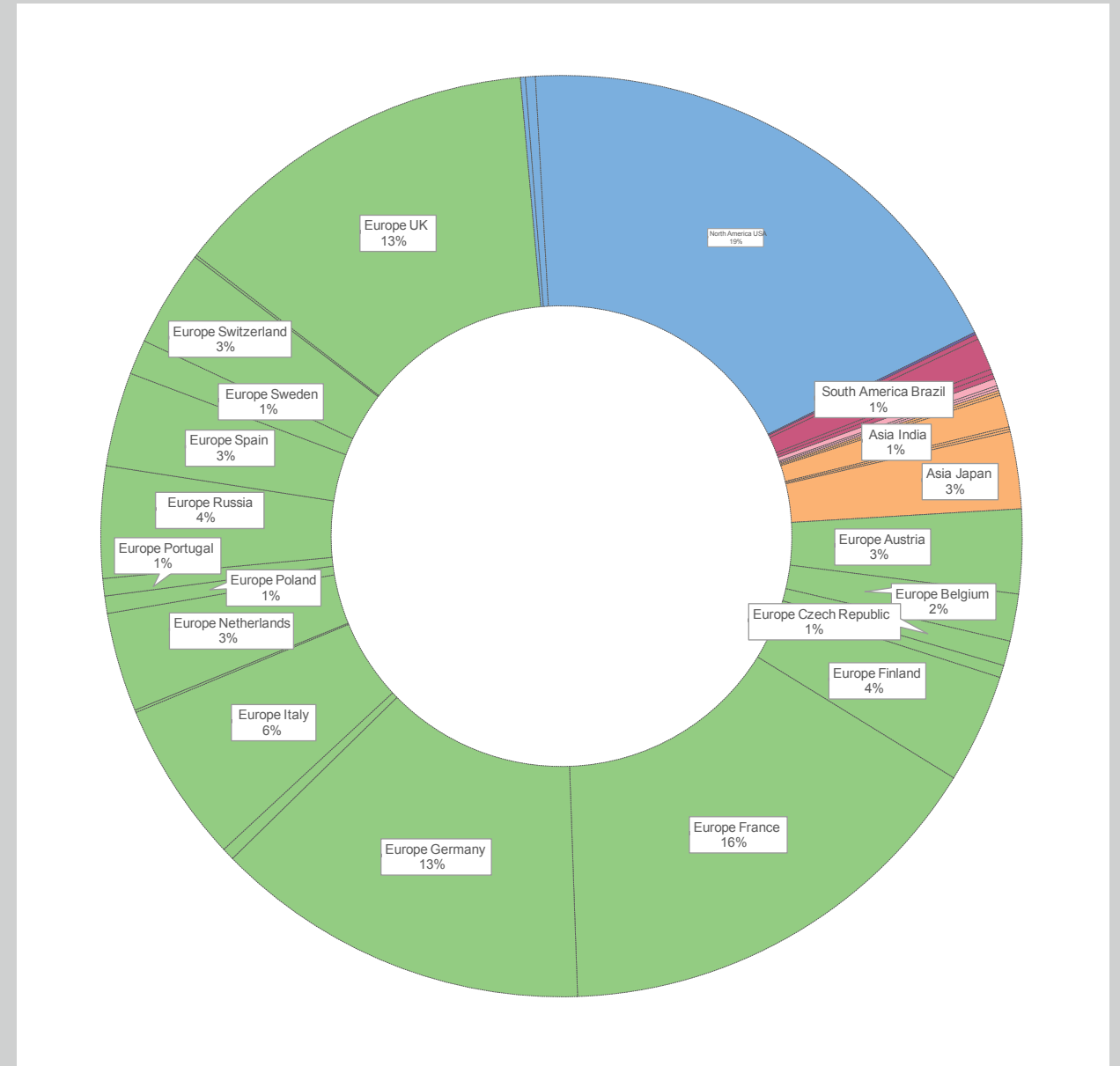


Fig. / Sl. 3f Continents and countries covered in each book and in total. Source: *Mapping Global Architectural Histories on Modernism*. Author: Laura Sánchez Carrasco. / Obuhvaćeni kontinenti i zemlje prema pojedinom djelu i ukupno. Izvor: *Mapping Global Architectural Histories on Modernism*. Autorica: Laura Sánchez Carrasco. / **Kenneth Frampton, *Modern Architecture: A Critical History* (1985).**

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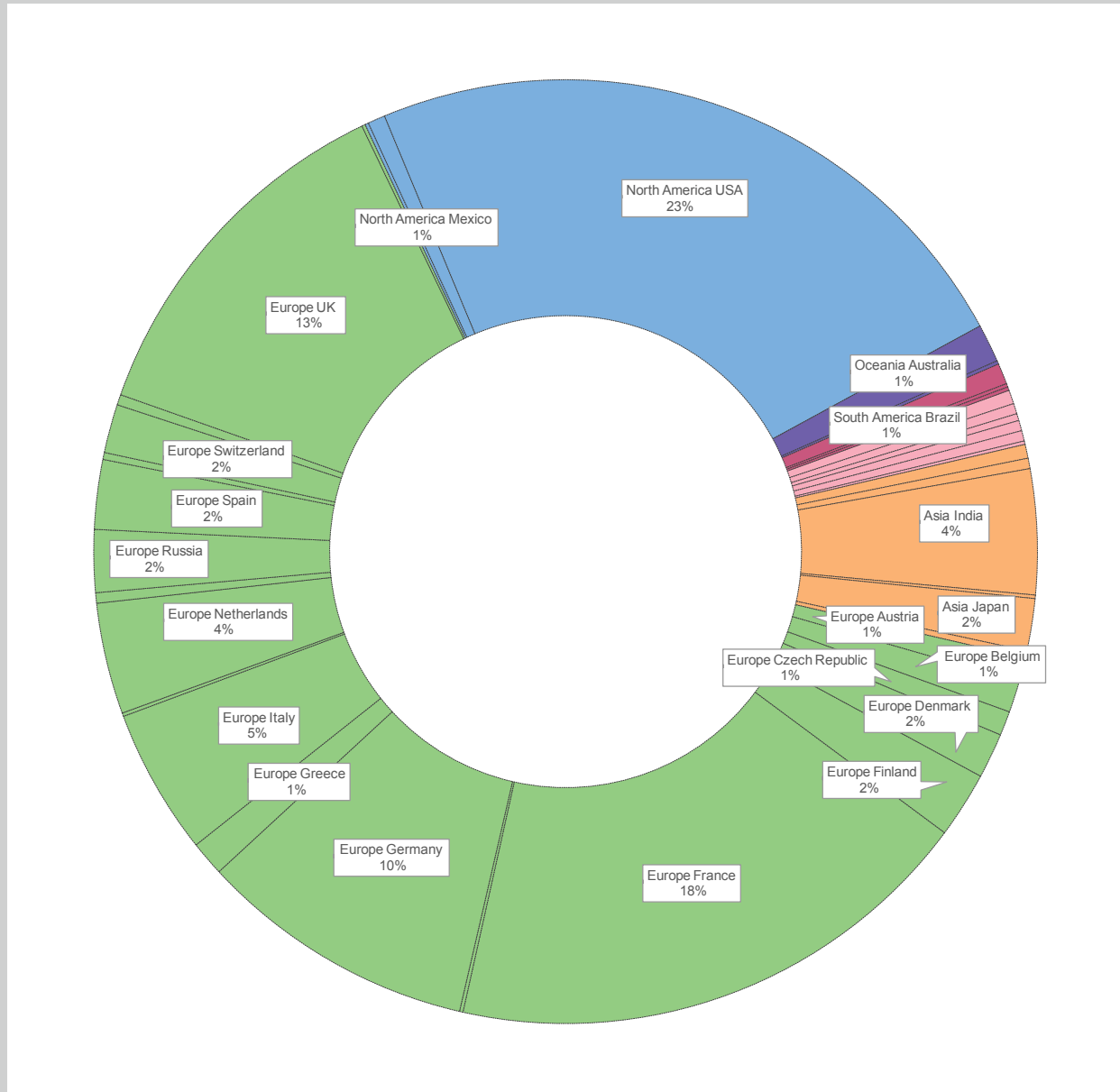


Fig. / Sl. 3g Continents and countries covered in each book and in total. Source: *Mapping Global Architectural Histories on Modernism*. Author: Laura Sánchez Carrasco. / Obuhvaćeni kontinenti i zemlje prema pojedinom djelu i ukupno. Izvor: *Mapping Global Architectural Histories on Modernism*. Autorica: Laura Sánchez Carrasco. / **William Curtis, *Modern Architecture since 1900* (1982).**

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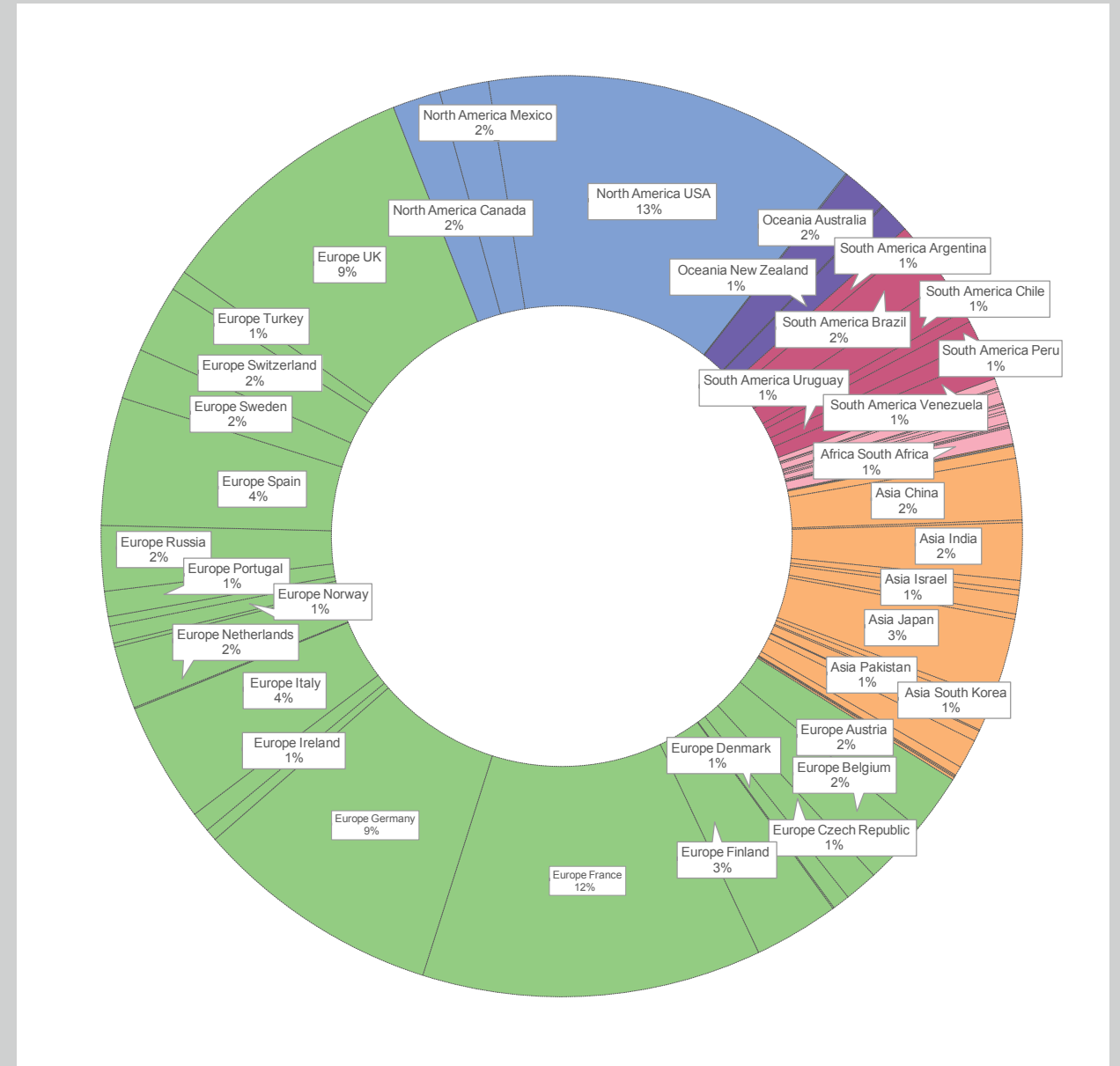


Fig. / Sl. 3h Continents and countries covered in each book and in total. Source: *Mapping Global Architectural Histories on Modernism*. Author: Laura Sánchez Carrasco. / Obuhvaćeni kontinenti i zemlje prema pojedinom djelu i ukupno. Izvor: *Mapping Global Architectural Histories on Modernism*. Autorica: Laura Sánchez Carrasco. / **Kenneth Frampton, *Modern Architecture: A Critical History* (2020).**

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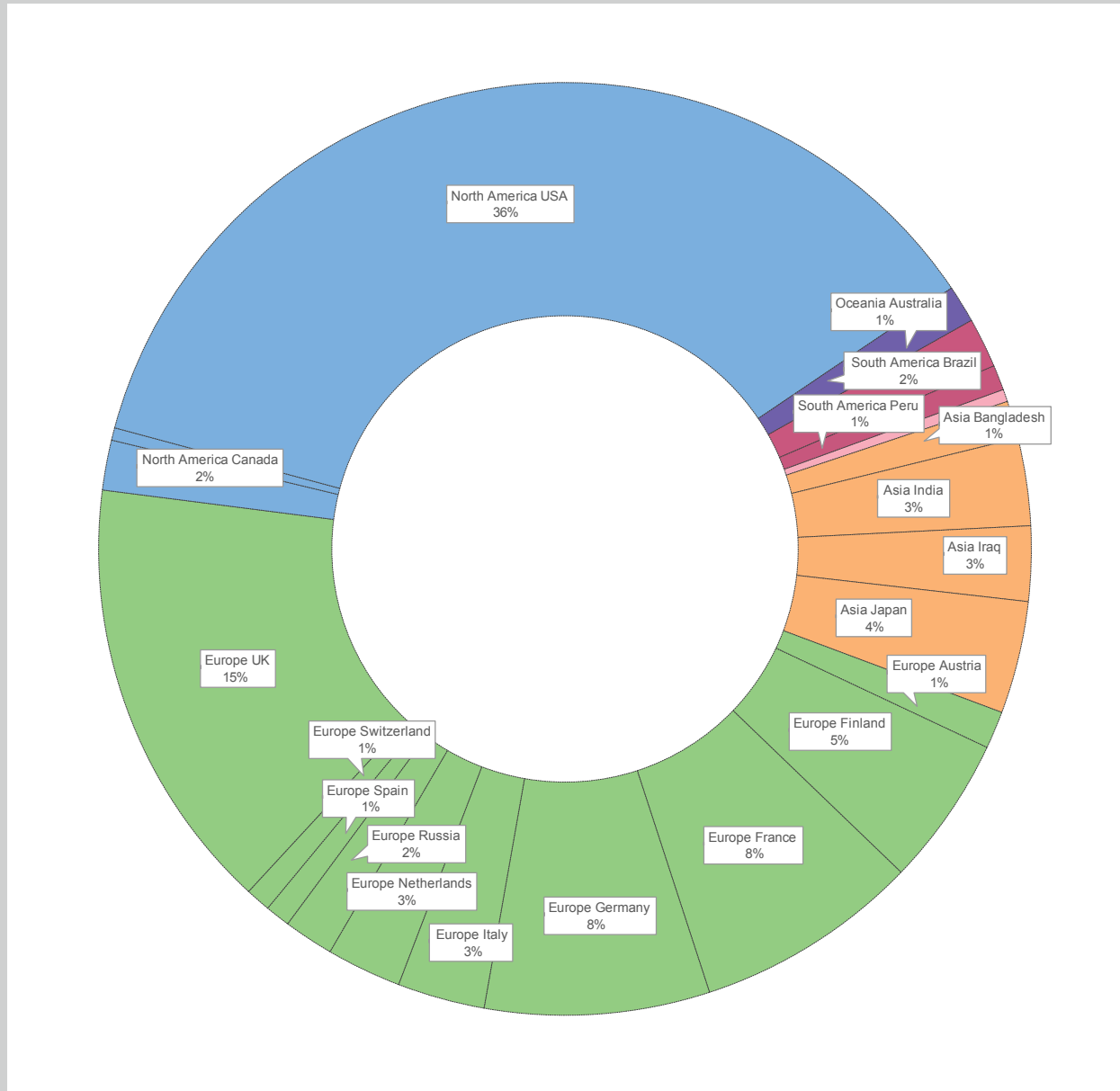


Fig. / Sl. 3i Continents and countries covered in each book and in total. Source: *Mapping Global Architectural Histories on Modernism*. Author: Laura Sánchez Carrasco. / Obuhvaćeni kontinenti i zemlje prema pojedinom djelu i ukupno. Izvor: *Mapping Global Architectural Histories on Modernism*. Autorica: Laura Sánchez Carrasco. / **Charles Jencks, *Modern Movements in Architecture* (1973).**

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DIGITAL ART HISTORY | DIGITALNA POVIJEST UMJETNOSTI

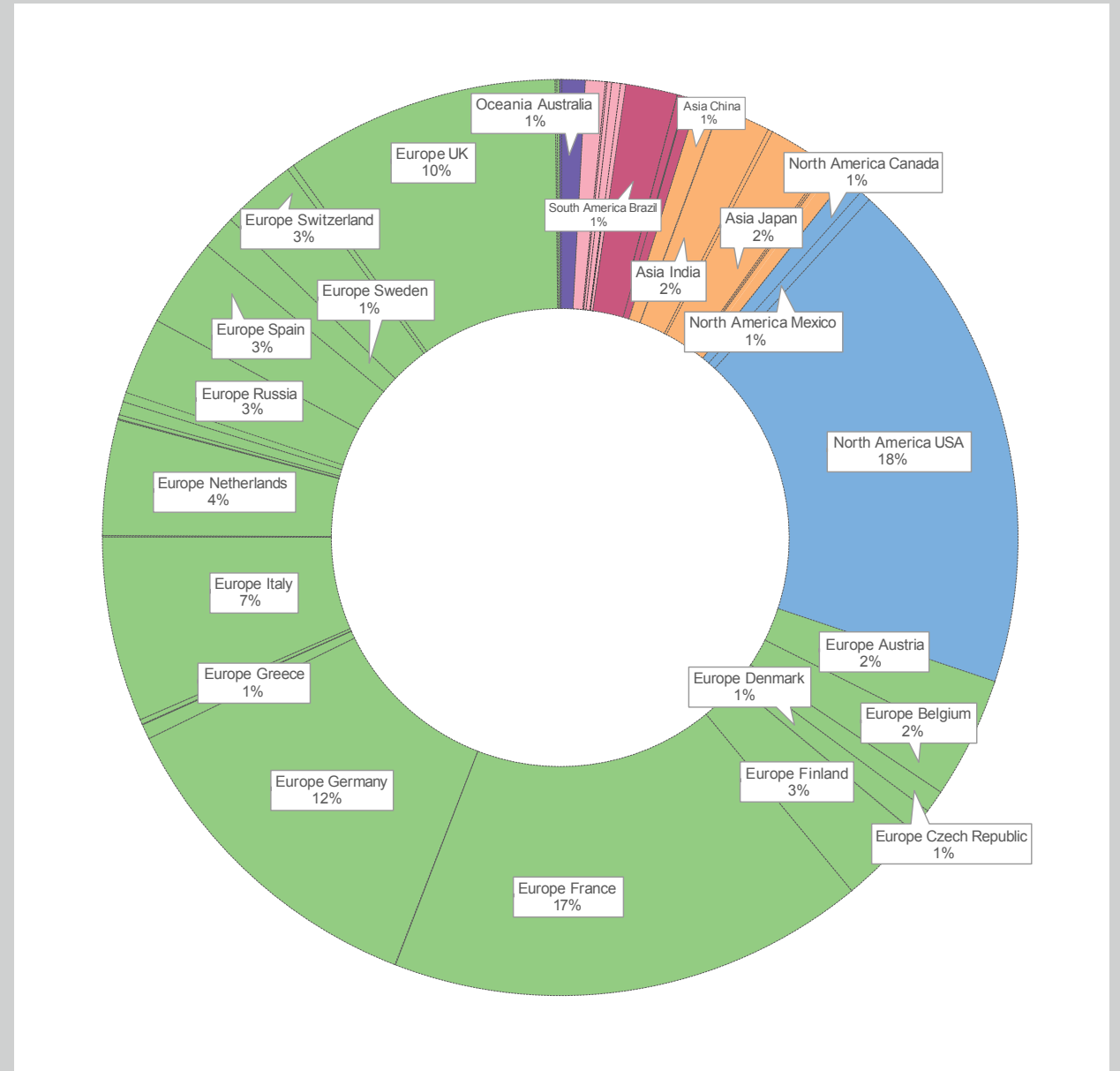


Fig. / Sl. 3j Continents and countries covered in each book and in total. Source: *Mapping Global Architectural Histories on Modernism*. Author: Laura Sánchez Carrasco. / Obuhvaćeni kontinenti i zemlje prema pojedinom djelu i ukupno. Izvor: *Mapping Global Architectural Histories on Modernism*. Autorica: Laura Sánchez Carrasco. / **Ukupno / In total**

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However, even Europe is not equitably represented. Germany and France are the two most represented countries, followed by the UK, Italy and Switzerland. Scandinavia—except for Finland and the architecture of Alvar Aalto, Southern Europe—except for Italy, and especially Eastern Europe have barely been represented in the histories of Modernism, with Croatia and other countries belonging to former Yugoslavia not being mentioned at all, but in the 2020 5th edition of Frampton's volume, which virtually doubles the original text.²² This bias is mainly due to the dominance displayed by the centers of Imperial power dominating cultural discourse and its publishing networks, but also due to the role of CIAM in articulating the narrative of modern architecture from the 1920s onwards.

Following the first edition held at La Sarraz, Switzerland, CIAM meetings were initially dominated by German-speaking members, who, in many cases, were close to the Bauhaus movement. After Hitler rose to power in Germany, British and primarily American academic institutions hosted the German diaspora, who played a seminal role in educating architects and architecture historians. At the same time, Le Corbusier and other French-speaking professionals took the lead in the CIAM conferences, placing their work in the spotlight.²³ The very vision of European Modernism is largely conditioned by the role architects played within this association, leading to the portrayal of different peripheries.

Although the exchange between modern Western European architects and the Soviet avant-garde was intensive in the early 1920s, this link grew weaker after the disappointing results of the Palace of the Soviets competition and the course taken by official architecture in the 1930s. Increasing travel limitations after World War II and the difficulty in accessing literature in English on Eastern European countries have led to an almost complete willful ignorance of Eastern European production in the histories of modern architecture up until the publication of Jean-Louis Cohen's *L'architecture au futur depuis 1889*, in 2012.

Though not ignored to the same extent, other European countries were also left out of the picture of these significant accounts for different reasons. It is interesting to review cases such as those of Spain, a peripheral European country due to its geographical situation but also due to the international isolation following the Spanish Civil War (1936–1939) during Francisco Franco's dictatorship. Although Spanish architects were active members of the CIAM conferences before the war—especially Fernando García Mercadal and Josep Lluís Sert, the ties with European debate forums disappeared after many professionals went into exile, limiting the international networks of Spanish architecture and also the dissemination of its modern architecture.

Giedion had visited Madrid for some lectures in the late 1920s and was able to go beyond Mies van der Rohe's Pavilion in Barcelona and Gaudí's work to include Arturo Soria's Linear City and Eduardo Torroja's racecourse, both

in Madrid. Benevolo's book is a particular case since, as noted above, it includes a special chapter on the country in every Spanish version of his book, written by a local expert. However, even in the original Italian version, he expanded on the typical modern icons—the Barcelona Pavilion and San Sebastian's Sailing Club, by Aizpurúa and Labayen—to include the Maciá masterplan by Le Corbusier, Josep Lluís Sert and other local architects, Goya's Monument by García Mercadal in Zaragoza, Fernandez-Shaw Gas Station, the Casa de las Flores by Zuazo, both in Madrid, as well as several other structures which had only been recently completed. However, other authors summarize the country in the work of Gaudí and, above all, the Barcelona Pavilion by Mies van der Rohe, a true masterpiece but still a foreign-produced building. Only Frampton's latest version attempts to provide a more comprehensive history of the country's modern architecture.

Back to the overall content analysis, since most canonical histories on modern architecture elaborate their discourse as a sequence of building projects, the next step deals with the structures they are based on. Considering the twenty most mentioned buildings in each book, we obtain a list of 24 buildings²⁴ that somehow epitomize the formal characteristics of modern architecture. The Villa Savoye, the Unité d'Habitation and the Bauhaus headquarters in Dessau stand out as the most clearly modern designs. However, it is surprising that the Crystal Palace, built in London almost eighty years before, also appears as one of the most frequently cited. The graph representing this aggregated data shows how one-third of the most mentioned buildings are by Le Corbusier while, among the rest, only Wright has more than one building in this list (Robbie House, Larkin Building and Johnson Wax headquarters). Funnily enough, a Modern Movement icon such as the Barcelona Pavilion by Mies van der Rohe has fewer mentions than the Beurs of Amsterdam by Hendrik Petrus Berlage or Josef Hoffmann's Palais Stoclet in Brussels (Fig. 4).

Regarding the architects, Le Corbusier is the absolute favorite, with almost double the mentions as the second most mentioned architect, Frank Lloyd Wright. The list continues with Mies van der Rohe, followed closely by Alvar Aalto and Walter Gropius. It is also worth noting how several Art Nouveau architects, such as Henry van der Velde, Joseph Hoffmann and Victor Horta, make the cut of the 20 most mentioned architects in all books. Besides Wright, the only North American representatives on the list are Louis Sullivan and Louis I. Kahn, while Giuseppe Terragni and especially Alvar Aalto represent other Modernisms within an otherwise decidedly Western European scene (Fig. 5).

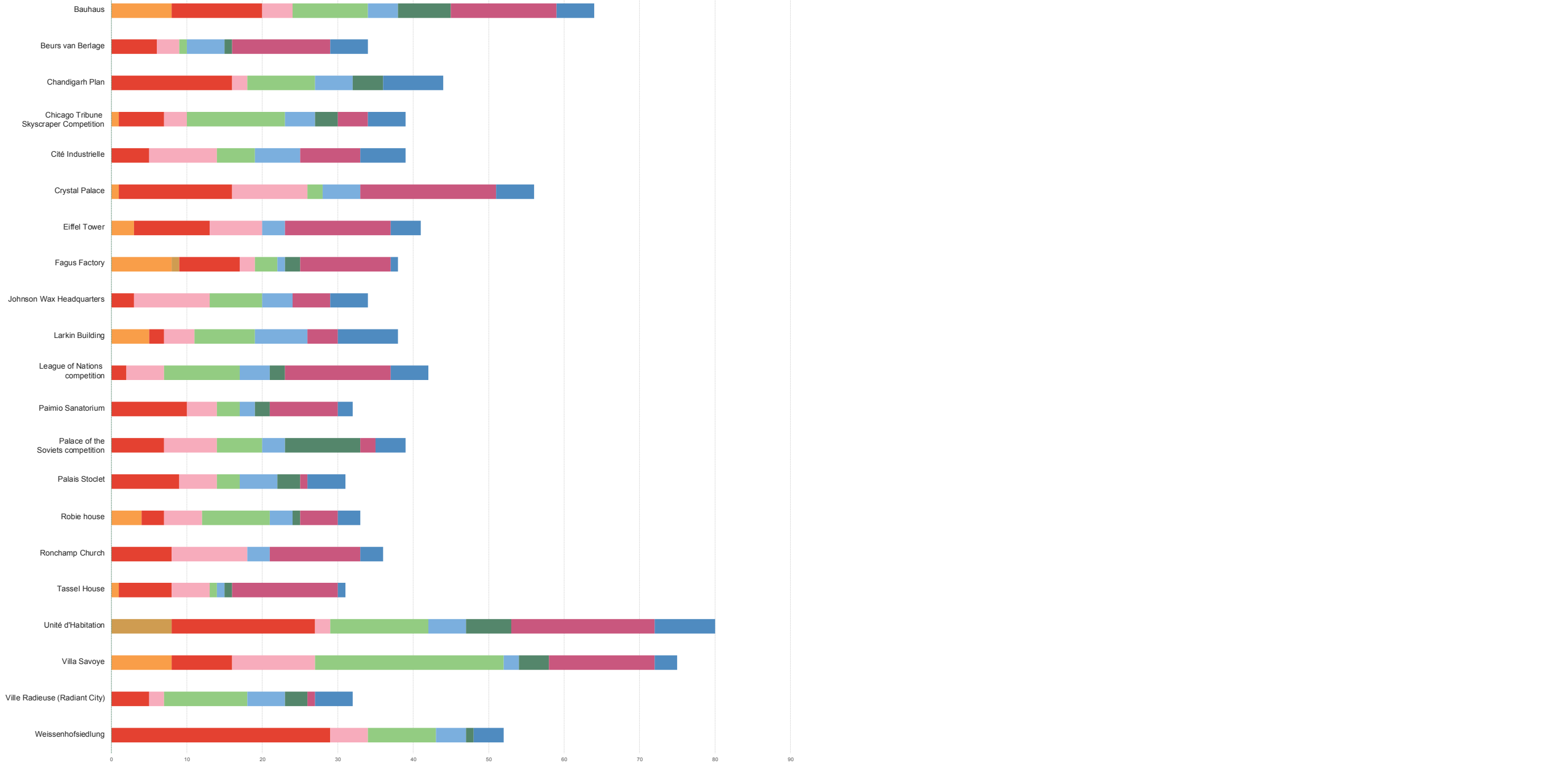
In viewing the representation of architects by book, in all cases, Le Corbusier is the most frequently mentioned architect. However, variations are observed in terms of who holds the second position: in the texts by Curtis and Frampton, Frank Lloyd Wright appears more often than Mies van der Rohe. In keeping with this, the third position also presents

²² The brief chapter on "Former Yugoslavia" focuses mainly on the work of Jože Plečnik and Edvard Ravnikar in Ljubljana and Vladimir Potočnjak in New Belgrade.

²³ In the initial phases of the organisation, leading positions in the CIAM organisation were primarily taken by German-speaking members. See: "Liste der Delegierten" in Steinmann, *CIAM Internationale Kongresse für Neues Bauen*, 213.

²⁴ Four buildings appear the same number of times.

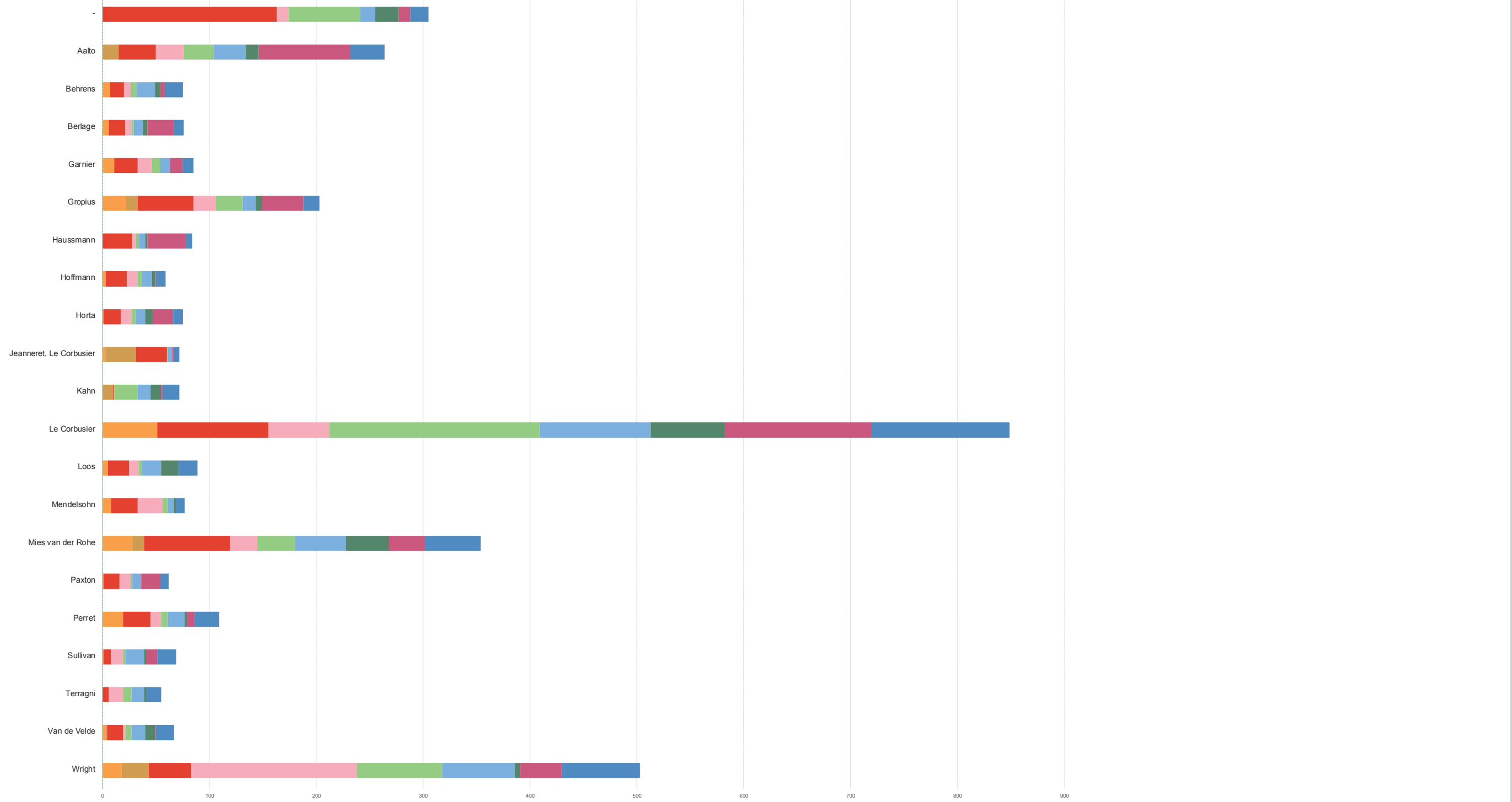
The 20 most mentioned buildings per book



	Weissenhofsiedlung	Ville Radieuse (Radiant City)	Villa Savoye	Unité d'Habitation	Tassel House	Ronchamp Church	Robie house	Palais Stoclet	Palace of the Soviets competition	Paimio Sanatorium	League of Nations competition	Larkin Building	Johnson Wax Headquarters	Fagus Factory	Eiffel Tower	Crystal Palace	Cité Industrielle	Chicago Tribune Skyscraper Competition	Chandigarh Plan	Beurs van Berlage	Bauhaus
1960 - Theory and Design in the First Machine Age			8		1		4					5		8	3	1		1			8
1973 - Modern Movements in Architecture				8										1							
1977 - Historia de la arquitectura moderna	29	5	8	19	7	8	3	9	7	10	2	2	3	8	10	15	5	6	16	6	12
1980 - Historia de la arquitectura moderna	5	2	11	2	5	10	5	5	7	4	5	4	10	2	7	10	9	3	2	3	4
1982 - Modern Architecture since 1900	9	11	25	13	1		9	3	6	3	10	8	7	3		2	5	13	9	1	10
1985 - Modern architecture: a critical history	4	5	2	5	1	3	3	5	3	2	4	7	4	1	3	5	6	4	5	5	4
2005 - La arquitectura moderna: una historia desapasionada	1	3	4	6	1		1	3	10	2	2			2				3	4	1	7
2009 - Espacio, Tiempo y Arquitectura: origen y desarrollo de una nueva tradición		1	14	19	14	12	5	1	2	9	14	4	5	12	14	18	8	4		13	14
2020 - Modern architecture: a critical history	4	5	3	8	1	3	3	5	4	2	5	8	5	1	4	5	6	5	8	5	5

Fig. / Sl.4. The 20 most cited buildings in each book. Source: Mapping Global Architectural Histories on Modernism. Author: Laura Sánchez Carrasco. / Dvadeset najčešće spominjanih zgrada prema pojedinom djelu. Izvor: Mapping Global Architectural Histories on Modernism. Autorica: Laura Sánchez Carrasco.

The 20 most mentioned architects by book



	Wright	Van de Velde	Terragni	Sullivan	Perret	Paxton	Mies van der Rohe	Mendelsohn	Loos	Le Corbusier	Kahn	Jeanneret, Le Corbusier	Horta	Hoffmann	Haussmann	Gropius	Garnier	Berlage	Behrens	Aalto
1960 - Theory and Design in the First Machine Age	18	3		1	19	1	28	8	5	51		3	1	3		22	11	6	7	
1973 - Modern Movements in Architecture	25	1					11				10	28				11				15
1977 - Historia de la arquitectura moderna	40	15	6	7	26	15	80	25	20	104	1	29	16	20	28	52	22	15	13	35
1980 - Historia de la arquitectura moderna	155	2	13	11	10	10	26	23	9	57			10	10	3	21	13	6	6	26
1982 - Modern Architecture since 1900	80	6	8	2	6	2	35	5	3	197	22	1	4	4	3	25	8	2	6	28
1985 - Modern architecture: a critical history	68	13	12	18	16	8	48	6	18	104	12	4	9	9	6	12	9	9	17	30
2005 - La arquitectura moderna: una historia desapasionada	5	9	2	2	2		40	2	16	69	10		7	3	2	6		4	5	12
2009 - Espacio, Tiempo y Arquitectura: origen y desarrollo de una nueva tradición	39	1		10	7	18	34			138	1	2	19	1	36	39	12	25	4	86
2020 - Modern architecture: a critical history	73	17	14	18	23	8	52	8	18	129	16	5	9	9	6	15	10	9	17	32

Fig. / Sl. 5 The 20 most cited architects in each book. Source: Mapping Global Architectural Histories on Modernism. Author: Laura Sánchez Carrasco. / Dvadeset najčešće spominjanih arhitekata prema pojedinom djelu. Izvor: Mapping Global Architectural Histories on Modernism. Autorica: Laura Sánchez Carrasco.

some exciting variations: for Benevolo, Gropius holds the third position ahead of Wright. The graph also displays Zevi's devotion to Wright and organic architecture, as well as Curtis' admiration for Le Corbusier. It is also significant how Giedion barely writes about Behrens, Loos, Mendelsohn or Kahn and how Wright does not receive too much attention from Colquhoun.

This data is currently being transferred onto an interactive GIS map to better filter and visualize results for targeted readings. This allows users to zoom in, aggregate results by country, architects, and decade, and compare the books and their approach to a specific region, among other tools. The map will be available in open access so that other researchers can access it when writing future histories on modern architecture (Fig. 6).

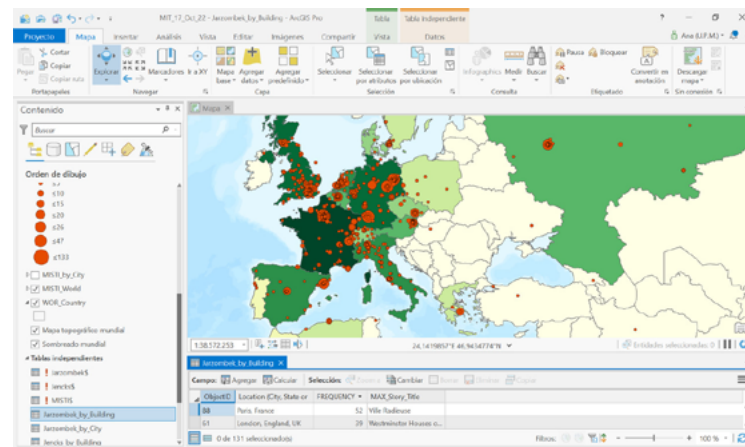


Fig. / Sl. 6 GIS map. Source: *Mapping Global Architectural Histories on Modernism*. Author: Luis San Pablo. / GIS karta. Izvor: *Mapping Global Architectural Histories on Modernism*. Autor: Luis San Pablo.

PERPETUATING THE CANON

The Eurocentric bias in the canonical histories of architecture, which was first questioned in the 1980s, has been subject to subsequent revisions by different authors. At the beginning of the twentieth century, postcolonial theories fostered a global shift in academic debates, which is yet to be developed fully.²⁵ The new histories of modern architecture published in the last decades — mainly the books by Marco Biraghi,²⁶ Colin Daviss²⁷ and Luigi Prestinzenza,²⁸ among others — insist on this Western European vision, although they extend their time frames further into the twenty-first century. Although Jean-Louis Cohen's *L'architecture au futur depuis 1880*²⁹ has made a significant attempt to incorporate Eastern Europe into the Modernist discourse, other geographies have not been incorporated to the same extent.

Recent editions of some twentieth-century histories discussed earlier have expanded their geographical scope. This is the case of Frampton's 2020 edition, which is about twice as long as the original one.³⁰ The author has eliminated the penultimate part of previous editions, added a fourth part in which all continents are tackled, and ended up with a final chapter on "Architecture in the Age of Globalization." More countries from all continents are included in order to give the audience a more nuanced portrait of Modernism worldwide, but they are presented as independent events with limited interfaces and connections.

Thus, expanding the geographical scope is not enough. Although not strictly speaking a history of architecture, Luis Fernández Galiano's *Atlas: Global Architecture circa 2000*³¹ helps illustrate this issue. This essay compilation portrays all five continents but fails to question the Eurocentric perspective of previous publications since most of the buildings featured are designed by European architects building abroad, and not even the texts on all regions are by local authors. Funnily enough, Frampton constantly cites this publication as a reference.

To address the initial research questions focusing on how modern architecture has been represented, which buildings and authors have been excluded, and how local histories have been incorporated into these narratives, it can be concluded that the canonical histories of modern architecture rely heavily on buildings that are overwhelmingly in Western Europe or by Western European architects. This is apparent even in the most inclusive histories, such as those by Benevolo and the latest edition of Frampton's work. In addition to calling for more extensive geographical representation, scholars are questioning these architect-based narratives and are advocating for an expanded agency that includes issues such as gender, patronage and labor.³²

As regards the buildings and authors left out, it seems insufficient to simply add more names and projects to the list. Instead, an effort should be made to review the actual structures of these books, which have traditionally framed the output of any given world region through the West's social, temporary and historical frames, disregarding local circumstances and more complex transnational relations. As Sibel Bozdoğan holds, "The point is to show what [Edward] Said calls 'intertwined histories,' that is, to show that contrary to the basic assumption of traditional Eurocentric historiography, the Western canon and the cultural production of societies outside Europe and North America are not separate and independent."³³

As for the integration of local narratives into the canonical histories of modern architecture, the only attempts made have been timid. Benevolo's addition of a specific chapter on the country by a local historian in the different translations of his book is worth noting, but this does not help to place local production within a larger context. Cohen's attempt to include Eastern Europe in a broader Western narrative has also had a limited effect. Data analysis of the canonical histories of Modernism shows little evolution between the work by Sigfried Giedion in 1941 and the latest recollection by Alan Colquhoun in 2002, despite the critical assessment of history at large since the 1980s and the debate generated around the global turn at the end of the century. The similarities in the buildings and architects featured in individual volumes and the structures of the books' discourses themselves show how authors have largely assumed previous narratives and helped perpetuate the canon. Thus, a truly global history of Modernism is yet to be written. We hope these digital tools will help drive this process forward.*

- 25
De la Vega, "Modern to Contemporary. A Historiography of Global in Architecture."
26
Biraghi, *Storia dell'architettura contemporanea*.
27
Davis, *A New History of Modern Architecture*.
28
Prestinzenza, *Historia de la arquitectura moderna: de las vanguardias a nuestros días*.
29
Cohen, *L'architecture au futur depuis 1889*.
30
Frampton, *Modern Architecture: a Critical History*, fifth edition.
31
Fernández-Galiano, *Atlas: Global Architecture circa 2000*.
32
See, among others: James-Chakaborty, "Expanding Agency: Women, Race and the Dissemination of Modern Architecture," and the research project *Women Writing Architecture*, led by Anne Hultsch and funded with an ERC Starting Grant.
33
Bozdoğan, "Architectural History in Professional Education: Reflections on Postcolonial Challenges to the Modern Survey," 210.

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