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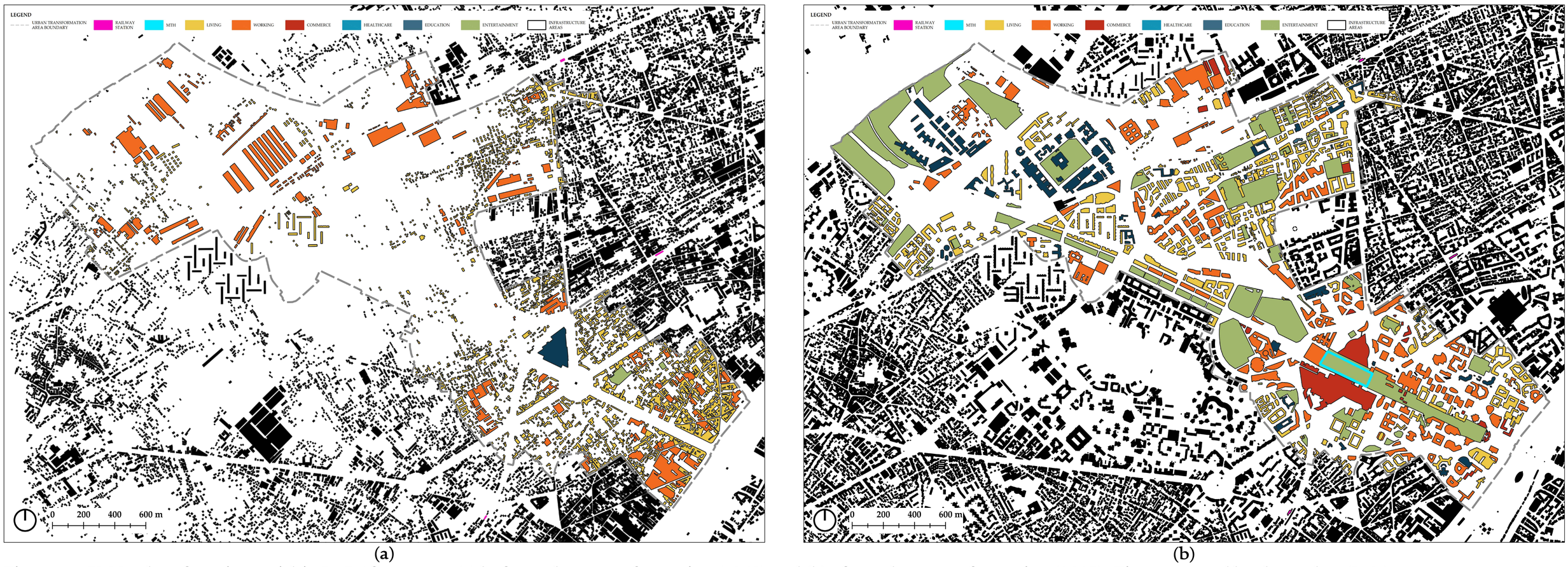
Multimodal Transit Hubs as the Catalysts for Urban Transformation in European Metropolises / Multimodalna prometna čvorišta kao pokretači urbane preobrazbe u europskim metropolama



(a) (b)

Figure 1. 15MC urban functions within La Défense area: (a) before urban transformation (1968) and (b) after urban transformation (2025). Figure created by the author (L.A.).

A case study: Barcelona, Berlin, London, and Paris

Railway stations that integrate various modes of transport to become multimodal transit hubs (MTHs) represent a key component of the urban transformation plans in European Metropolises due to the vast and underutilized spaces associated with them. This research aims to gain a comprehensive understanding of urban functions in transformed city areas with MTHs and the role of MTHs in these areas. Since the research relies on two related scales - the urban transformation area and the MTH building - multiple research methods are applied. The „15-minute city“ (15MC) concept is used to identify urban functions within urban transformation areas with MTH and MTH itself. This concept has been chosen among others as it considers both the distribution of urban functions and residents' mobility needs. Through a comparative analysis of the urban structures before and after the transformation of each case, and through cross-case comparison, the conclusions have been drawn.

This approach has been examined in three case studies: the *La Sagrera Station area* in Barcelona, the *Central Station area* in Berlin, and the *King's Cross Station area* in London. The analysis indicated that the reduction in infrastructural areas has led to the concentration of urban functions, which can be observed in two ways. Firstly, once industrial areas became mixed-use areas, or in other words, urban diversity has increased. Secondly, urban functions now occupy significantly larger areas than before the urban transformation. Transportation remains MTH's core function, while the urban functions are still limited to the commerce one and often focused on travelers only, highlighting the need for greater integration of functions to serve the local community. Their surrounding areas have transformed into vibrant urban districts according to the 15MC principles. Additionally, a comparison was made between the estimated investment values in urban functions within the urban transformation areas and those in MTH buildings. It was found that MTHs act as catalysts for comprehensive urban transformation, as indicated by economic investments that are largely directed toward the development of urban functions in their surrounding areas.

All previously stated results and methodology were further tested on the *La Défense area* in Paris. Unlike the previously analyzed examples, the MTH in Paris - *La Défense Station* was planned as an additional hub within the city's transportation network, meaning that existing railway stations continued to operate even after its construction. The main difference in the Paris example lies in the fact that the transformation of the former industrial area began with the construction of the Centre of New Industries and Technologies (CNIT) in 1958, rather than with the building of the MTH itself. However, the construction of the MTH initiated a complete transformation of this area into a financial district (similar to *King's Cross*), with the CNIT subsequently repurposed into a shopping center and hotel.

As part of ongoing research, examples from other European metropolises will be examined to establish urban criteria for MTH planning within urban transformation areas.

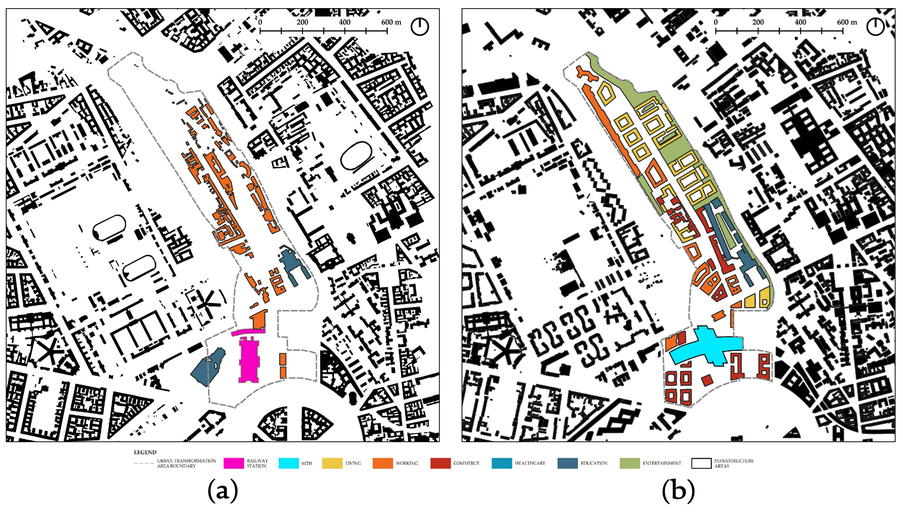
Referentni primjeri: Barcelona, Berlin, London, and Paris

Željeznički kolodvori koji povezuju različite načine prijevoza i postaju multimodalna prometna čvorišta (MPČ) predstavljaju ključnu odrednicu planova urbane preobrazbe u europskim metropolama zbog golemih i nedovoljno iskorištenih površina uokolo njih. Cilj ovog istraživanja je steći sveobuhvatno razumijevanje urbanih funkcija u preobraženim područjima grada s MPČ-om i uloge MPČ-a u tim područjima. Budući da se istraživanje oslanja na dva mjerila - područje urbane preobrazbe i zgradu MPČ-a - primjenjuje se više istraživačkih metoda. Koncept „15-minutnog grada“ (15MG) koristi se za utvrđivanje urbanih funkcija unutar područja urbane preobrazbe s MPČ-om i unutar zgrade MPČ-a. Ovaj koncept odabran je među ostalim sličnim konceptima jer uzima u obzir i raspodjelu urbanih funkcija i potrebe stanovnika za mobilnošću. Zaključci su izvedeni komparativnom analizom urbanih struktura prije i nakon preobrazbe svakog primjera, kao i međusobnom usporedbom primjera.

Ovaj pristup ispitan je na tri primjera: *La Sagrera područje* u Barceloni, područje *Glavnog kolodvora* u Berlinu i područje *King's Cross kolodvora* u Londonu. Analiza je pokazala da je smanjenje infrastrukturnih područja dovelo do koncentracije urbanih funkcija, što se može promatrati na dva načina. Prvo, nekadašnja industrijska područja postala su područja mješovite namjene, odnosno povećala se urbana raznolikost. Drugo, urbane funkcije sada zauzimaju znatno veća područja nego prije urbane preobrazbe. Prometna funkcija i dalje ostaje glavna funkcija MPČ-a, dok su urbane funkcije i dalje ograničene na trgovinu i često usmjerene samo na putnike. To naglašava potrebu za boljim povezivanjem funkcija koje bi služile lokalnoj zajednici. Njihova okolna područja preobrazila su se u živahne urbane četvrti prema načelima 15MG. Osim toga, provedena je usporedba procijenjenih vrijednosti investicija u urbane funkcije unutar područja urbane preobrazbe i onih u zgrade MPČ-a. Utvrđeno je da MPČ-ovi djeluju kao katalizatori sveobuhvatne urbane preobrazbe, što pokazuju ekonomska ulaganja koja su uglavnom usmjerena na razvoj urbanih funkcija u njihovim okolnim područjima.

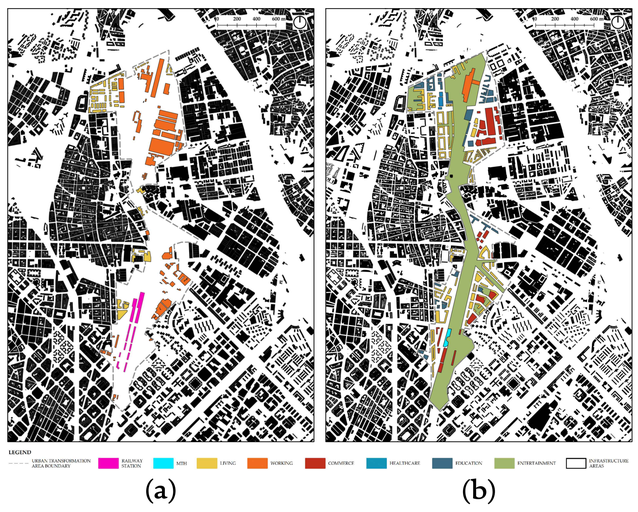
Svi prethodno navedeni rezultati i metodologija istraživanja dodatno su provjereni na području *La Défense* u Parizu. Za razliku od prethodno analiziranih primjera, MPČ u Parizu, *La Défense Station*, planirano je kao dodatno čvorište u gradskoj prometnoj mreži, odnosno i nakon njegove izgradnje postojeće željezničke stanice nastavile su funkcionirati kao takve. Temeljna razlika uočena na primjeru Pariza jest ta da je preobrazba nekadašnjeg industrijskog područja grada započela izgradnjom Centra za nove industrije i tehnologije (CNIT) 1958., a ne izgradnjom MPČ-a. Međutim, izgradnjom MPČ-a započinje cjelovita preobrazba ovog područja u financijsko središte Pariza (poput one u području *King's Cross*-a) te čak i CNIT doživljava prenamjenu u trgovački centar i hotel.

U daljnjem istraživanju, ispitat će se primjeri iz drugih europskih metropola kako bi se utvrdili urbanistički kriteriji za planiranje MPČ-ova u područjima urbane preobrazbe.



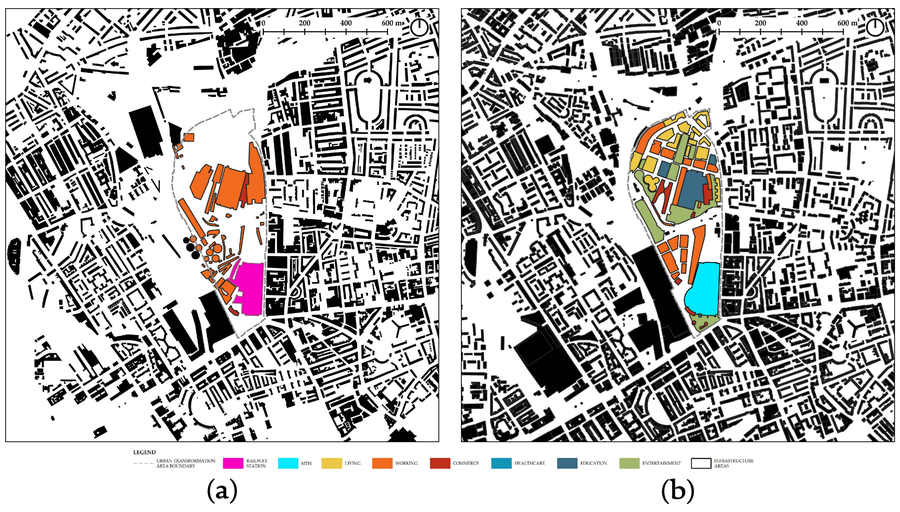
(a) (b)

Figure 2. 15MC urban functions within Europacity: (a) before urban transformation (1940) and (b) after urban transformation (2025). Figure created by the author (L.A.).



(a) (b)

Figure 3. 15MC urban functions within the La Sagrera Station area: (a) before urban transformation (around 1990); (b) after urban transformation (still in progress). Figure created by the author (L.A.).



(a) (b)

Figure 4. 15MC urban functions within King's Cross area: (a) before urban transformation (1999) and (b) after urban transformation (2025). Figure created by the author (L.A.).