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## The rail traveller, pedestrian or customer? Passenger flow and retail: critical boundary objects in HS Station development

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### Abstract

Passenger flow has become the new central paradigm for the design and management of high speed stations (Pitsiava-Latinopoulou M. Iordanopoulos P., 2012). The articles explains how and why railway operators conceptualize crowd versus flow concepts and produce streaming techniques that seek fluidity as well as retail value creation. To begin with, a legal-economic analysis replacing the introduction of competition into the rail system and the space pricing methods for commercial leases are provided. Then, developing the notions of flow fertilisation and commercial layout, the author explains the links between flow management techniques and retail intensification, thanks to a 2010-2017 evolution map of Paris Gare du Nord. This leads to a more generic discussion establishing the role of services in pedestrian versus consumer behaviour and micromobility patterns in main railway hubs.

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*Keywords: regional efficiency, country comparison, high-speed rail.*

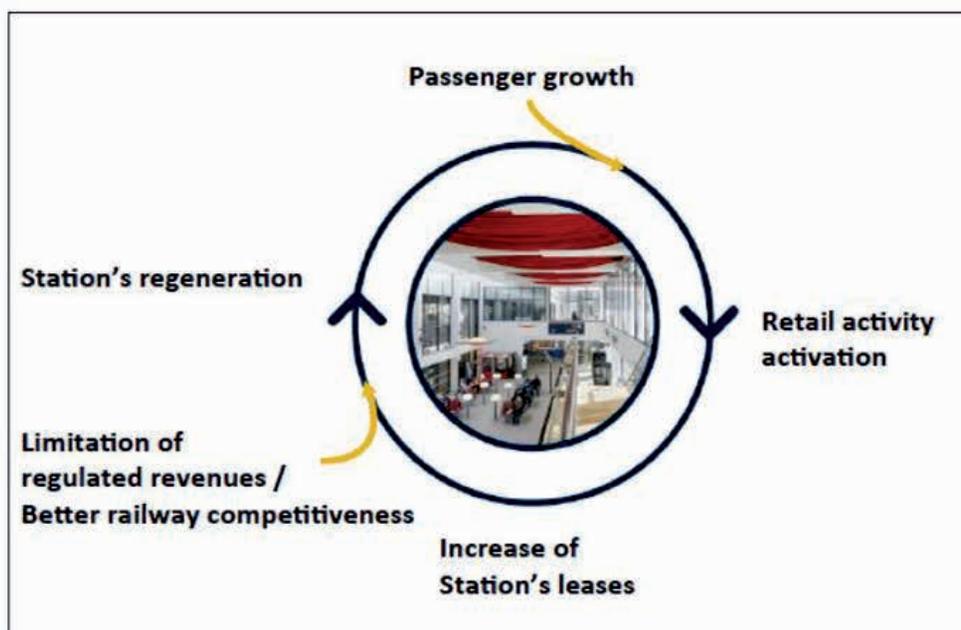
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## 1. Introduction

Facilitating mobility within stations entails releasing space to give pedestrians greater freedom of movement. At the same time, commercial station development is causing an expansion in retail spaces, prompting two trends: reduction in the space dedicated to pedestrian movement, reduction in the speed of pedestrian movement (as a result of window-shopping). Mobility and retail development are therefore inherently contradictory realities, as it may seem (Peters D., 2009, Cidell J., Pryterch D, 2015). However, Gares&Connexions, the entity that runs France’s stations on behalf of SNCF, claims not only that commercial development and free flowing movement within stations are perfectly compatible, but that they are interdependent. The operator claims that a good pedestrian flow model ultimately makes stations commercially profitable, and conversely, that good retail spaces impact favourably movement. A rise in user numbers creates greater consumer demand, with the result that people spend more in stations (Steinmann L. 2015). Because of this greater commercial intensity, the operator is able to raise the prices of its commercial leases, and therefore obtain an increase in certain kinds of revenue (so-called deregulated revenue). This increased funding opens up possibilities of two types. Either the station operator limits the level of regulated revenues that the rail companies pay to use a station (this may gradually reduce ticket prices, thereby increasing the modal share of rail and therefore footfall within stations). Or the station operator can use this income to expand and modernise the station and thereby improve the conditions of movement (Picard Rachel, 2013).

Figure 1. Passenger growth and retail development interdependence



The aim of this article is to deconstruct this circular reasoning (figure 1), by observing the limitations of its real-world implementation. Employing the notions of resizing, pedestrian flow management, intensification of the commercial value of space and the “nudging” of traveller behaviour, we explore the spatial principles of railway station

retail development. A first part theoretical approach of the definitions of crowd and flow management in railway stations is presented. Then, we will detail the physical changes the transformations occurred in Gare du Nord between 2010 and 2017, before (part 3) describing more generally the use of retail development as a technique of flow management in railway hubs.

## 2. Traffic streaming and commerciality in France’s big stations:

### 2.1 The normative framework redefines the station operator’s role

Stations and the entities that operate them have undergone major institutional changes in the last 20 years, in response to a European directive requiring the unbundling of infrastructure operation from train operation (Riot E. 2014). Across Europe, station management is gradually taken out of the hands of the historic national rail operators, and station operators must adopt a position of neutrality towards the different rail operators that use their stations. In France, the station operator is still entirely state-owned, but it prepares itself for this opening of the market. Two third of its financing comes fees paid by the regulated sector (for train access to stations and for the use of station premises: ticket offices, technical premises...), and one third of its income is earned from the leasing of retail space. This means that making stations both attractive for train operators and profitable for retailers are two pillars of a station development strategy.

Figure 2.A Gares & Connexions facts sheet and institutional transformation

Gares & Connexions : railway asset manager
<ul style="list-style-type: none"> <li>- employs 3700 peoples (SNCF 125 000)</li> <li>- manages 4000 stations</li> <li>- welcomes 10 million visitors per day</li> <li>- manages 2 millions square meters of railway public domain</li> </ul>
Gares & Connexions : 2016 main results
<ul style="list-style-type: none"> <li>- total activity : 1,2 billions €</li> <li>- total fees earned from railway operators and retail: 590 millions € (48 % of total activity)</li> <li>- 210 millions € invested in station regeneration projects</li> </ul>
Gares & Connexions 2016 retail activity (deregulated revenues)
<ul style="list-style-type: none"> <li>- leasing 180 000 square meters in retail</li> <li>- earning 190 millions € in commercial fees</li> </ul>

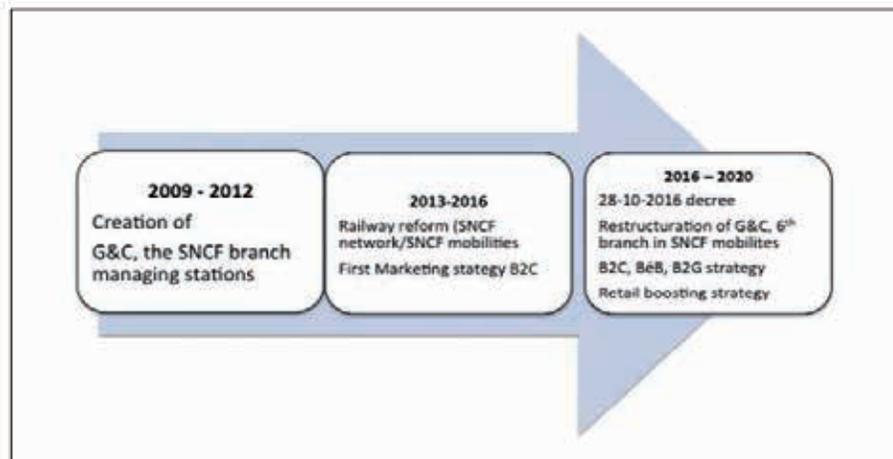


Figure 2.B. Gares & Connexion institutionnal and industrial transformation: progressive autonomy from SNCF, anticipating neutrality to any railway operator

## 2.2 The art of converting a crowd into a stream

Following the legal and institutional changes, the station operator now works with a series of “customers”: partnerships with rail companies, financial and real estate entities, commercial developers (B2B); station users (B2C); other public institutions (B2G). Flows represent a central topic in the negotiations conducted with all three clientele (Bertolini L, Spit T, 1998). The volume and sociodemographic characteristics of these flows are essential parameters in the profitability of B2B operations. Smooth flows within stations generate customer satisfaction, which is central to a good B2C relationship. Social acceptance of changes to the station, the quality of its integration into the urban environment, its role as an attractive presence in a neighbourhood, are key to good B2G relations (Mulders-Kusumols C, 2005). In social sciences, therefore, flow represents a “boundary object” (Trompette, P. Vinck, D. 2009., Pucci P. 2011), in other words a point of convergence between institutions with different or diverging interests, as well as an object that forms the basis for the construction of a series of political and financial arrangements. In this sense, flow is a construction, it is not just something that is quantified, but something that is produced. Organising a human multitude into a flow consists in a series of actions that are both material and immaterial. Materially, it entails transforming a formless crowd into a series of pedestrian streams in order to achieve performance objectives (relating to movement, commerce and security). In immaterial terms, it entails a series of operations to translate mathematical scales into economic scales. Traffic streaming is both a method and an essential goal of the ongoing changes to stations. It consists in constructing the optimum conditions for passenger navigation around stations, which themselves are envisaged as assemblies of spaces and temporalities with the capacity to fertilise - and maximise - the commercial potential.

The transformation of crowd into flows signifies a profound shift both in social representations and in operational techniques. This change is not historical, yet railway companies try to manage and control crowds and produce flows since a long time and had established a doctrine: different arrival and departure halls, separate areas for freight and passenger traffic, waiting areas and waiting rooms allocated to specific categories of passengers, shopping galleries, and catering areas on the upper floor (Ribeill G., 1996). Nonetheless, the fear of the crowd is still resurging as a threat, while flow appears to be the basis for the development of an economic

sector, railway travel retail. The balance between crowd (universe of the street) and flow (vocabulary of networks) entails a series of symbolical and managerial changes.

The crowd evokes both social risk (riots) and the mob, and therefore congestion. Flow relates to technologies, conveying an image of order and discipline. A crowd is made up of an approximate number of individuals, whereas flow is measurable (Fruin JJ. 1971). Each product of a disaggregation of the flow, that is to say the pedestrian can receive a message and become manageable. Shaping a flow signifies therefore the conversion of a mass of travellers into atomic units possessing each particular temporal and spatial attributes. Station flow management, hence, is a field of engineering is anchored in traffic management techniques drawn from road engineering. Today, station flow management, as a combination of scientific knowledge and empirical know-how is being integrated into a new field based on two metrics.

In geography, a metric is more than a measurement of distance, it is a way of determining relations of magnitude and of ordering space and time. The station organization during the peak hours and the evaluation of time passed into the station (the “allowance time” i.e. the time passengers allow before the scheduled departure time of their train, Gasnier A, 2007) are key informations to calculate the station’s optimum volume and planification. It results of a mathematical equation, including the number of users present at a given moment (the rush-hour), the duration of their presence in the station and the walking speed of each pedestrian. Then, once each of these pedestrians has the capacity to react to informational stimuli, the station operator is in a position to manage the station around flows, by means of audible or digital messages relating to both planned and unplanned events (ticket sales, train departures, etc.).

### 2.3 Flow management, condition and result of railway station commercial intensification

The French station operator explains the professional shift towards flow-based management by the very sharp growth in station use, presenting this both as a proven fact, an unavoidable process that demands heavy investment in expansion, and at the same time as a strategic objective in the construction of the previously mentioned virtuous circle. True, the rise in the number of rail travellers is an observable reality, even if a certain ambiguity remains in the projections for station occupancy. The rail company produces traffic projections and the station operator produces wish figures for growth in station “users” (travellers + friends and family of travellers + 20% local community). Every presentation of a station upgrade project starts with a reminder of this very high growth level, in the same time generating a sense of anxiety (the danger of the crowd envisioned as mob, factor of congestion), and legitimating the implementation of the streaming model justifying retail growth.

Article R 145-6 of France’s Commercial Law defines the commerciality of a station as “the extent to which it enables tradespeople who do business there to make profit as a result of the qualities of the place alone, regardless of the abilities of the store operators”. The potential commerciality of a store depends mainly on its location and relative position to pedestrian traffic (Dang Vu H., Jeanneau H., 2008). An improvement in these criteria can justify an increase in the value of the lease, and therefore an increase in rents and fees. With the setting up of the subsidiary Retail&Co in 2016, the French station operator approached railway station retail with the intention of maximising the rental value by combining growth in the numbers of station spaces with growth in overall station commerciality. For the 400 French stations containing at least one retail outlet (out of the 4000 across the country), the operator has announced growth targets of 50% in retail area (300,000 square metres by 2025) and of 100% in fees from the deregulated sector in less than 10 years (Ropert P, 2015). The intensification plan is very evident. The station operator’s objective is to take advantage of a travel retail sector in which it is still a minority player (around 30% of market share, compared with the airport sector players, which have carved out 50% of the potential market). What is at stake here is nothing



less than a transformation of the foundation of railway activity. By applying new flow streaming principles to station spaces, the company is no more as manager of a major asset burden (2 billion square metres) but a firm specialised in harvesting pedestrians and generating profits from their movement (Baron N., Roseau N., 2016).

### 3. Intensification of traffic flows and commercial potential in Gare du Nord

#### 3.1 Gare du Nord : socio-spatial assessment

Gare du Nord is a transport hub that offers a wide variety of lines and rail provision: regional trains, high-speed trains, intercity and interregional trains, regional express network (RER) and metro. The station's most recent aboveground architectural changes coincided with the arrival of high-speed rail in the 1990s: TGV to Lille in 1991, Eurostar service for the link with England in 1994, then Thalys in 1996 to cities in Belgium, Germany and the Netherlands. In the early 2000's, further redevelopment was carried out on the western part of the station, its facade and basement, in order to facilitate the connection with the RER and the Metro, with the inauguration of a shopping street at basement level (level -1), and a big transfer lounge in the sub-basement (Level -2). This reinforced the vertical structure of the station into four levels open to passengers, two (first floor and sub-basement) accessible following ticketing controls, the other two (surface and level -1) free access. Gare du Nord is mainly a commuting station, (75% day dwellers) many of them moving between different types of rail service. As a result, there is intense vertical and horizontal movement between the four levels, particularly at rush hour, although not creating a universal mix. On the contrary, the occupancy and movement regimes in the station's different levels are socially very distinct: the top level, set aside for the cross-channel train, is occupied by international customers, with large spending capacity, whereas the two underground levels are used by regional commuters from the northern suburbs, the poorest in Ile-de-France. The surface hall distributing passengers west to east towards the Thalys, TGV, Intercity and TER regional express trains is, technically therefore used by the widest range of customers (leisure, business, commuters, locals), whether boarding at this level or passing through to move to another level.

**Figure 3. The vertical structure of Paris Gare du Nord. View of the concourse (level 0), mix of retail facilities and passenger stair to Eurostar boarding in foreground. In the background, main information panel, removed in 2015.**



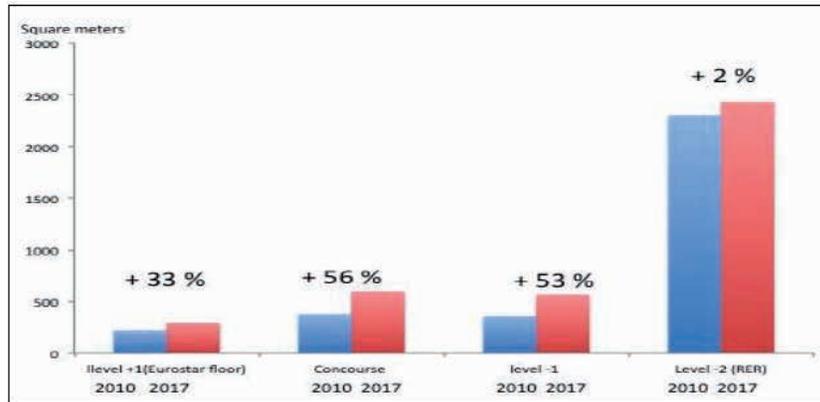
Flow data at Gare du Nord are tremendous: at any given moment during rush hour, the number of people within the station is around 20,000, which every day generates some 650 to 700,000 pedestrian movements or, in round figures, annual footfall of some 200 million people. Traffic surveys forecast a 26.7% increase in passenger traffic by 2020 (up to a capacity of 25,100 travellers per day) resulting from the introduction of new and larger rolling stock. The current 750-seat TGV Eurostar is to be replaced by a 900-seat model, while the regional trains are shifting from a capacity of 570 passengers to double decker vehicles with capacity of up to 1500 people. This increase in flows will affect the sections of the cross-platform differently: on the western side, an additional 20% passengers will be disgorged from Eurostar and Thalys, whereas at the eastern end, TER is likely to handle a further 34% traffic.

**Figure 4 : Paris Gare du Nord facts**

Building
<ul style="list-style-type: none"> <li>- Date of construction (Hittorff Architect 1889 then 1900)</li> <li>- Façade (and concourse) length : 180 meters</li> <li>- Total surface: 80.000 m2</li> <li>- Retail: 110 Stores (2015)</li> </ul>
Frequentation
<ul style="list-style-type: none"> <li>- 2012: 19.800 passengers at peak hour (Commuters 75 %)</li> <li>- 2020: 25.100 passengers at peak hour (+26,7 %)</li> <li>- First european station : 700.000 passengers a day / 200 millions a year</li> </ul>

It seems clear that store distribution and commercial profitability at Gare du Nord reflects of station's flow segmentation. The current flows account for the presence of 110 retail outlets in the station, generating €16 million in annual revenues (excluding parking and advertising). The retail areas are very unevenly distributed across the different levels, but the contrast between the profitability of the levels and store types is even greater. The huge transfer lounge in the subbasement was redesigned some 10 years ago and provides 2400 square metres of retail space, with around forty outlets, laid out like a mall with lines of shops clustered in blocks of two or three. There is no major plan to change the commercial dynamic in this zone, apart from the ongoing replacement of the brands as leases come to an end. For this reason, we will not focus on this level, nor on the basement level above, which is laid out on a street model with ground-level shops, though there are here ambitious plans for this space (a 53% increase in retail space, but no changes in articulation between flow and commerciality). Our interest focuses now in the surface concourse and the Eurostar zone (level +1) living respectively 56% and 33% increase in retail surface, and demonstrating the reciprocal optimization of flow management and commercial optimisation techniques.

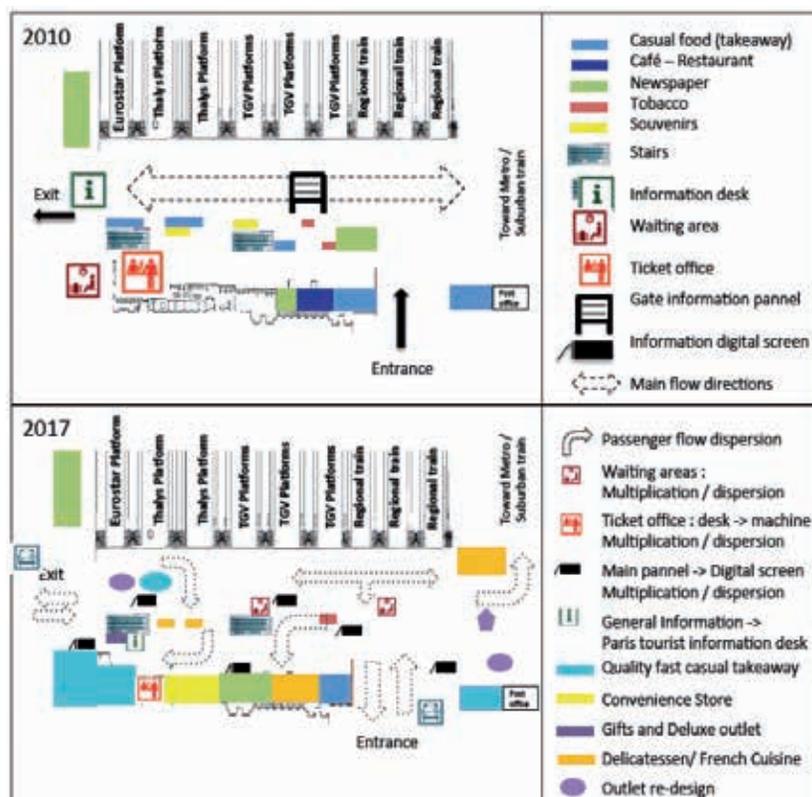
Figure 5. Retail surface extension in the 2010's at Paris Gare du Nord



### 3.2 Before - After comparison of concourse and eurostar level

The changes made to the layout of these two levels between 2010 and 2017 show the application of flow streaming principles. This station is, in fact, a shallow building with severe architectural constraints: the concourse has a depth of no more than 30 metres between the shops against the facade and the platforms (Clozier R., 1942). In 2010 it has two entries (heritage of arrivals and departures doors), 4 escalators connecting it to the floor below, and services and shops supply: fast food, newspapers, tobacconist, sweets and souvenir shop. In addition, under the first floor mezzanine, there was a waiting room in the eastern corner, ticket counters along the facade, along with a line of ticket machines and another row of food outlets (snacks and sandwiches). In all, the cross-platform contained 7 brands with 12 sales outlets, dominated by the Relay brand (with 55% of the surface area), the rest being mediocre quality food outlets.

Figure 6.A / 6.B. Retail relocation and flow optimization transformation : Concourse



The Eurostar floor was organized very differently for legal reasons. At the top of the escalator was the Schengen border post, with customs and police inspection points, then a long, narrow shopping alley with 7 sales outlets, leading on to waiting and ticket inspection zones and a final waiting room. Despite the very tight spatial constraints of this system of alleyways, allowance time here was very long and the shops so scarce that, despite their ordinariness (fast food, newspapers), they were quite remarkably profitable, notably in terms of returns per square metre.

Above long bibliographical capitalization on commerce strategy at Gare du nord (Perier M., 2003 and Oki-Debayles K., 2008,) personal observation and 2010 and 2013, and then in 2015 and 2017 gives noticeable modification both in traffic flow organisation and retail outlet location (figure 6). We clearly understand that two previous problems with pedestrian mobility have been partly solved. First, permanent crowding - not under, but in front of and behind the central noticeboard - hampered flows onto or off the escalators, creating a shearing effect (movement of people blocked by a fixed and compact crowd) at rush hours. Second, the general congestion of the zone and the immobility of passengers around the noticeboard restricted the profitability of the shops located against the wall, which were also disadvantaged by their distance (approximately 20 m) from the most attractive part of the hall and by the lack of light (because of their position under the mezzanine).

In 2017, following changes have been made. First, the central noticeboard has disappeared and been replaced by a profusion of digital monitors scattered everywhere. This reorganisation was done to disperse travellers and keep them moving throughout the whole space of the station, in order to avoid the shearing effect in the central zone. Second, the row of ticket offices has almost disappeared, since most tickets are now bought at machines or online. This has released space for movement and shops. The latter are no longer contained in small kiosks but in larger "shells", alternating with information points and short-wait micro-lounges (a quiet zone to the west is still set aside for longer waiting times). Better lighting and plexiglass walls generate transparency. The result, therefore, bigger place, denser space obtained by more partitioning. Shops have undergone four types of transformation: relocation and enlargement, diversification and renovation of the retail range (Briard C., 2015, Bertrand P. 2015). The dominance of the Relay brand has not been affected, this chain has opened a specially designed "concept store" offering not only books and newspapers, but also fine food (Fauchon), a café, a reading lounge. As a sort of station in the station, Relay combines the functions of waiting-room, information desk and travel retail store (Briard C., 2016).

**Figure 7. Relay "concept store" design: the convergence of information, consumption and waiting functions apart from the main stations spaces.**

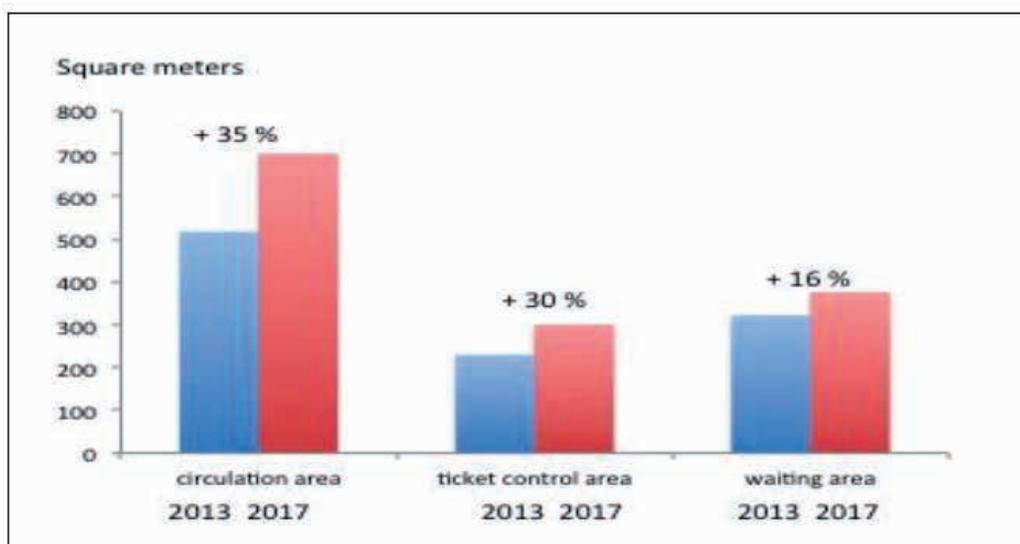




What is observed in 2017 is the result of a gradual renewal of leases made by Retail&Co conducted with a commercial strategy : moving the fast food offering upmarket and increasing the diversity of eating options. The concourse hosts several ‘lab’ stores testing out experimental products (highquality pastry) and formats (cafes on wheels, pop-up shops, show-rooms). The longitudinal distribution of the brands along the concourse reflects the application of a differential in commerciality and the adaptation to the different types of travellers. In the east of the hall, near the street entrance, a post office, a tobacconist and an affordable food outlet enable morning commuters, who have the shortest allowance time (often less than 10 minutes), to do routine shopping without wasting time (coffee, water, newspaper). For TGV customers, who board in the middle of the cross-platform, the allowance time goes from 15 minutes in the case of frequent business travellers to 30 or even 45 minutes for leisure passengers. Ad, in 2017, these travellers are exposed to a wider range of options : apart from routine shopping, they may succumb to impulse buying (gift, chocolate, cakes), and even if they resist, if they are themselves commuters (which they often are), they will be exposed to the same brands on their return in the evening and may perhaps be prompted to make a more considered purchase. Finally, the area closest to the Eurostar and Thalys boarding point, to the west, shows a particular concentration of “chic” new brands (special teas, french cuisine) taking advantage of maximum proximity to international customers (for another approach in Brussels Stations, see Ingelgem G., 2015).

### 3.3 Eurostar floor Level +1: integrating movement and consumption logics to maximize spatial profitability

Figure 8. Enlargement and redistribution of surfaces at Level + 1



The changes identifiable on the concourse as well as in the upper level are taking place through the renegotiation of B to B contractual conditions, which produce both higher revenues for Gares&Connexions and a new spatial experience for travellers. With a small increase in the surface area accessible to the public (achieved by reducing the space allocated to the customs offices and the police, who are shifted upstairs, without public access), pedestrian space has been increased by a third and waiting areas by 86%. Here, passengers are obliged to wait for long time : they must pass the police checkpoint, then the boarding. Flow congestion has been reduced through the installation of more gateways and more technology (passport recognition

and face recognition). Consequently, the long passageway has been converted to a free strolling area, where people can freely shop. The highly profitable corridor of shops remain mostly, but its continuity is broken up by mini comfortable lounges and a shallow counter with barstool type chairs, where travellers can lean to enjoy the view below. Then there is a second retail module leading to a large and luxurious lounge (for the importance of waiting areas Van Hagen M., 2011). This 2010-2017 comparison leads us to recontextualize and discuss, as in Pitsiava-Latinopoulou M. Iordanopoulos P., 2012, the place of design in connecting flow management and commercial development.

#### 4. Eye and foot, shops and surfaces, movement and value creation

##### 4.1 Beyond station commodification

The interplay between flow reorganisation and retail space rearrangement in Gare du Nord shows how railway institutions (Gares&Connexions and its subsidiaries, Retail&Co for retail space management, AREP for arrangement and design) are introducing flow management as a way to maintain movement and produce value. The guiding principles of the changes observed since 2010 are inspired by a fast-growing science of mobility, driven by transnational trends that draw on airport development principles and on railway architecture and design. These changes show us very materially the railway adaptation to a new legal and institutional environment. Here in the Gare du Nord, disadvantaged as it is compared with its counterpart, Saint-Pancras Station in London, the station operator has taken every opportunity to enhance its image and is preparing, in the near future, to offer SNCF and its competitors equal excellence in the range of B2B and B2C services. The hypothesis we have now demonstrated of the interdependence between processes intended both to make spaces of movement more efficient and retail outlets more profitable, now raises further critical questions on the new nature of station's spatiality and commerciality.

Our analysis shows that flow management, generates additional consumption, in other words greater profitability, not only because of the increase in passenger numbers or retail spaces, but through the intensification of commerciality produced by spatial rearrangements. The increase in the average sales transaction and in purchase frequency, the diversity of consumption modes (routine or impulse buying, automatic or considered purchase) reflect parallel nudging processes of movement activation and behaviour modification among clients. In order to gain further understanding of the determinants of these events (choice of movement and impulse to buy), we now need to go beyond a rationalistic conception of commerce and beyond a mere mechanistic approach to flow, by debunking two illusions.

The first illusion entertained by station traffic engineers is that the traveller's allowance time can be divided up in the same way as Euclidean space, that one can identify a time of arrival at the station, then a time of information searching, then a time of access to the platform and waiting. This division is the only way to individualise an allowance time that is itself divided into two parts, the first under conditions of stress (when the traveller's movement is determined by the need to identify the right platform and check the departure time), the second without stress and allocated to other activities (waiting or shopping), hence waiting rooms and stores. The central component of traffic streaming, the nudge, seeks to use aural, visual or digital messages to modulate the decisions of pedestrians, to encourage without forcing, influence without pushing, and gently to prompt individuals, through the appeal of brands, or gregarian attitude, to move in the right directions at the right time. However, this mathematical partitioning fails to take account of the reality of the traveller's experience, in other words to the chaos of sensations, emotions and states of mind in which they are immersed from their arrival in the station (Löfgren O., 2008), with the result that time as



they experience it is not clock time, divisible into sequences, but subjective in its extent and duration.

The second illusion is one held by observers of the changes in the stations, who mock the corporate rhetoric around customer focus and question the real utility of station retail in terms of the assumed needs of travellers. Are all these gift shops and fine food outlets really necessary? This debate on the commodification of stations has prompted comparative research on stations and airports and on the connection between public and private in the management of potentially useful transport spaces. However, for our purposes, it would seem more useful to go beyond the simple measurement of commercial provision, and to explore the paradigm shift whereby the pedestrian is more and more - at the same time - reacting as a customer.

## 4.2 Harmonizing visual consumption and movement patterns

Any science of station flows and more generally of pedestrian mobility in dense conditions must firstly take into account the conditions of spatial visibility and visibility, and secondly the different perceptual regimes of users (Brighenti A. 2010). This new episteme establishes the station not only as a space of flows, but first of all as a space of looking, defining the user not as a pedestrian but as an observer (moving observer/observing mover). The pedestrian's behaviour therefore arises from the succession of planes of view presented as he moves, in the same time he moves, which at each moment defines the field of visibility and therefore the range of actions open to him.

And precisely, the before and after studies 2010 - 2017 conducted in Gare du Nord confirm that the rearrangement of the flows and retail spaces has brought about a enormous change in the conditions of visibility. In a way, stations are designed for nearsighted people, in another way for longsighted or vista lovers. The cross-platform, initially structured by large clusters (waiting at the back, shopping at the side, departure board in the middle) has been fragmented. Because of the proliferation of retail outlets, commercial intensification has infiltrated throughout the station (including moving and waiting areas). Already saturated with sensory and visual stimuli, the station space - a space both fragmented and filled - nudges the customer through a series of enticements, prompting two major forms of mobility. Within a visual field of some 10 to 20 metres, the customer perceives - simultaneously - a short empty space to move through, a first mass of informational signals (signs, platform number) and commercial messages (shopwindow, brand, billboard...). The act of buying no longer entails a break or a detour, but has arguably become a simple gesture one can do without stopping the movement logic. Moving customers navigate or drift, from one spot to another, in zigzags, from one local sphere to another contiguous zone (from the screen to the shop, then to the ticket punching machine, then to the train).

The second flow paradigm lies in the construction of a new optical relationship between movement in the station and retail function. The installation of a two-level starred restaurant on the crossplatform, the vertical extension of the Relay outlet, and the reorganisation of the Eurostar mezzanine, all these examples proof that the provision a panoptic view of the flow is a station design trend. In any of these three stores, the pedestrian can appreciate the long view, the wide spectrum, the aerial perspective, a "stationscape" which is a source of visual or sensory enjoyment that itself creates commercial value. Thus, the place with the best view of the station is no longer the station master's office, but Eurostar floor or deluxe restaurant, that are the station's smartest retail outlet. From here, the user is no more a pedestrian (he feels aristocratically detached from the dangerous crowd or from the coercitive flow. Thus, the traveller unconsciously consents to buy an expensive sandwich in an outlet, topologically perched above the fray, and the price includes the enjoyment of the show laid out before him as he eats.

**Figure 9. Retail verticalisation, flow visual consumption as part of retail value (a: from above, B; from inside) NB authors photography**



### 4.3 Trademarks as landmarks: spatial thresholds and punctuations within the station space

This in-depth study of the spatial changes at Gare du Nord has more to add to our understanding of the connection between traffic management laws and retail layout marketing techniques. First, a reminder: retail outlets in stations have always played a role in spatial orientation. However, in the context of enhanced commercial density and traffic intensity, this role becomes even more essential. Today, one can no longer arrange to meet under the main information board, since it has gone, or under a digital screen, since there are dozens of them. So retail brands play an even more fundamental role than in the past. Their features (position, orientation, height, colour) punctuate perception of the station space.

An examination of social networks shows that young people arranging to meet at Gare du Nord do not choose the rail company's information kiosks as their rendezvous point, but the favorite outlet. As a static landmark that stands out in the human flood, a trademark is as effective a way as an information screen to negotiate the movement through space, to construct access strategies around obstacles. The more the station space fills up with discontinuities, the more layered and fragmented it is, the more the passages through it must be both marked and softened. Retail spaces act not only as waymarks for the different spaces, but become pivot points and thresholds in their own right. So shop windows disappear, partitions become transparent, retail kiosks become rotundas or acquire wheels, operating as junctions between passport control and ticket inspection in the Eurostar mezzanine), or between concourse and departure platform.



## 5. Conclusion

Even before the transfiguration scheduled for 2025 by the architect Wilmotte (Wilmotte et al 2016) which will give it a new bridge and dozens of additional retail outlets, Gare du Nord shows how a process of flow engineering and the strategic management of commercial leases can combine to transform the conditions of movement and consumption in stations. We have seen how, in a classic space-time metric used by traffic management engineers, the pedestrian is conceptualised as a rational individual who seeks to optimise his movement. In this view, a retail outlet is only seen as an embellishment that contributes to customer satisfaction, but also as an encumbrance. Following this research, however, we can see that there is a much richer connection between movement and commerciality in a station, and that the retail outlet is a key to the flow management process. For an even closer analysis, this research would need to integrate more field research (and more stations analyses) and could focus on two areas. One would entail mapping the role of shops from and within the pedestrian's visual cone in order to achieve a finer measurement of the value added (or subtracted) through the incorporation of the logic of flows into commercial production. The other research direction would be to develop a cognitive approach to movement in stations in order to better understand how the pedestrian drifts in radar mode within this fragmented density, this material and sensory labyrinth, from one attractor to another, between positive and negative stimuli and excitements and, also, with the help of digital devices (Vincent S., Ravalet E. et Kaufman V., 2015).

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