

Theme issue contribution

What is Digital Valuation Made of? The integration of valuation poles on a reservation platform and its effects on the hotel industry in Switzerland

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Abstract

Digital platforms act as new powerful intermediaries challenging existing market orders in many sectors. Algorithmically producing ratings and rankings often built from online consumer reviews, platforms are important players in the digitizing of valuation. This article asks how these new platform-generated valuations relate to other forms of valuation. It presents a qualitative case study of valuation in the hotel sector in Switzerland, drawing on interviews with professionals and a description of valuation categories on the Booking.com website. Going beyond the description of the opposition between online consumer reviews and traditional judgment devices, the analysis shows that valuation on the platform is based upon a permissive hierarchical integration of a plurality of valuation poles, with algorithmic valuation at its center. This destabilizes the evaluative landscape with regard to three issues: lack of transparency of the algorithmic ranking; weakening and even undermining of formulaic valuation; and the issue of singularization of the online offer.

Keywords: algorithms; Booking.com; digital platform; markets; online consumer reviews; ranking

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Introduction

In many economic sectors, digital platforms act as new powerful intermediaries and challenge existing market orders (Kenney and Zysman 2016; Kirchner and Beyer 2016; Srnicek 2017; Kirchner and Schüssler 2019). One important process through which they remake markets are via new forms of digital valuation such as ratings, rankings and online consumer reviews (OCRs) (Mellet et al. 2014; Stark and Pais 2020). Online valuation devices rely on an algorithmic logic, based on the transformation of user-generated content into a “trusted recommendation” developed by the platforms themselves. They add themselves on top of other, already existing “judgement devices” (Karpik 2010) on markets, such as those based on categories developed by critics, professional associations, experts or marketing (Beckert and Aspers 2011; Orlikowski and Scott 2014). How do the new platform-generated valuations relate to these other forms of valuation? This article empirically analyses these relations using a case study of the hotel industry, where OCRs and rankings produced by reservation platforms such as Booking.com challenge valuation devices that have long structured the market.

Several studies have analyzed the typical forms of valuation produced by platforms – OCRs, and the ratings and rankings based on them resulting from algorithmic treatment processes. OCRs typically take the standardized form of a rating and a written review (Beauvisage et al. 2013) and hold the promise of democratizing product and service evaluation by valuing everyday consumers’ points of view, rather than that of ‘experts’; they also cover much broader ground than guide books (Mellet et al. 2014). Studies on OCRs in the restaurant and hotel sectors have shown how wide adoption of these has had strong effects on professionals, who are forced to be reactive to this increasingly dominant form of valuation (Beuscart et al. 2016; Cardon 2014; Kim and Velthuis 2021). There are also indications that this “algorithmic” apparatus increasingly competes with and possibly replaces “formulaic” apparatuses of valuation such as those controlled by experts (Orlikowski and Scott 2014).¹

Kornberger et al. (2017) propose to conceptualize platforms as “evaluative infrastructures”. Their analysis demonstrates how platforms tend to integrate a plurality of valuation devices and put in place “distributed” valuation processes (2017: 85), albeit with a “hidden cursor” (2017: 89), since platforms seek to maximize revenue. We bring together the perspective on evaluative infrastructure and

¹ A formulaic apparatus of valuation is one in which “we see a formula at work” (Orlikowski and Scott 2014: 883). In the hotel sector, the formula consists of “a standards-centered model for what constitutes hotel accommodation, enacting both a method of hotel evaluation and a plan for hotel improvement” (Orlikowski and Scott 2014: 883).

discussion on the competition and interplay between algorithmic and “traditional” forms of valuation to advance the study of digital valuation on platforms. Our analysis of a reservation platform in the hotel sector shows how the platform combines different valuation forms, which we conceptualize as belonging to different valuation “poles”. The spatial metaphor of poles allows us to distinguish ensembles of devices responding to different principles and driven by different actor types, which occupy distinct positions in the evaluative space. Going beyond the description of the opposition between online consumer reviews and traditional judgment devices, the analysis therefore suggests that the evaluative innovation of platforms consists of their integration into a plurality of valuation poles. This integration is hierarchical and permissive, with algorithmic valuation at its center. We use in-depth interviews with hotel owners and managers to show how this destabilizes the evaluative landscape with regard to three issues: the lack of transparency in the algorithmic ranking; the weakening and even undermining of formulaic valuation (Orlikowski and Scott 2014); and the singularization of the online offer. Although the domination of algorithmic valuation tends to weaken the formulaic and commercial valuation poles, the plasticity of online evaluative infrastructures also presents opportunities for hotel owners and managers.

The article uses a qualitative case study on the Swiss hotel sector and the reservation platform Booking.com. The hotel industry was one of the first industries to become “platformized”, with the rise in the early 2000s of so-called online travel agencies (OTAs), and of specialized review websites such as Yelp or TripAdvisor. We conducted interviews with hotel managers, representatives of professional associations and sectoral organizations and other field actors to study the workings of valuation in this market. Adopting an inductive perspective on the evaluative infrastructure, we were attentive in particular to the perspectives of members of the hotel profession in order to understand how digital valuation shapes this economic sector. The interview data was complemented by a close description of the categories of valuation on Booking.com.

We start by discussing the literature and the main concepts and distinctions that will be used in this article’s analysis. This is followed by a presentation of the case study and the methodological approach. The empirical part starts with a description and analysis of the evaluative infrastructure on Booking.com. In a second analytical part, we discuss the relations between the different valuation poles present on the platform and the effects of the dominant forms of digital valuation (lay and algorithmic valuation) on other valuation poles.

Digital valuation on platforms

Over the past decades, digital platforms have emerged in an increasing number of sectors as diverse as retailing, transport, food delivery and accommodation. They are a new form of economic organization (Kenney and Zysman 2016) and can be defined as “online sites and services that (a) host, organize, and circulate users’ shared content or social interactions for them, (b) without having produced or commissioned (the bulk of) that content, (c) built on an infrastructure, beneath that circulation of information, for processing data for customer service, advertising, and profit” (Gillespie 2018: 18). Platforms either organize new markets or insert themselves into existing ones to their own benefit (Ahrne et al. 2015; Balsiger et al. 2022). Many scholars describe this phenomenon as the advent of a “platform economy” (Kenney and Zysman 2016) or even “platform capitalism” (Srnicek 2017) characterized by a few dominant players that algorithmically dictate the relationships and conditions of transaction among market participants, be they consumers, workers or organizations.

As new digital market intermediaries (Bessy and Chauvin 2013), platforms become “gatekeepers” (Lynskey 2017; Gillespie 2018) whose digital infrastructure and algorithmic tools of matchmaking have powerful effects on valuation (Kirchner and Beyer 2016; Kornberger et al. 2017). Their most characteristic evaluative devices are ratings and rankings (Stark and Pais 2020), which impact sellers on platformized markets and complement, or possibly compete with, other forms of valuation. Ratings are evaluations given by users to sellers (and sometimes vice versa, too) that offer feedback about performance. They are made visible on platforms, often as a numerical score. While platforms do not control them, they nonetheless have broad leeway in how they make them visible, how they calculate them, and also how they use them (for instance to exclude providers) (Stark and Pais 2020). They are typically one of the elements that go into the generation of rankings. Rankings are ordered lists of providers or goods, generated by algorithms and constantly updated and recalculated with the goal of favoring matches (Stark and Pais 2020). From the point of view of providers, rankings generate a hierarchy of visibility (Gillespie 2014; Fradkin 2017), with potentially important effects on sales. Broadly, two interpretations have been given to digital valuation on platforms: a “competition/replacement perspective” focuses on the effect of OCRs which increasingly compete with or even replace “traditional” valuation forms, while a “plurality perspective” presents digital valuation as plural evaluative infrastructures.

The competition/replacement perspective

A range of studies has highlighted how the characteristic forms of digital valuation – and in particular the innovation of OCRs –

increasingly compete with older forms of valuation. OCRs are a novel type of valuation device built on customer reviews of products and services that offer guidance to consumers (Jeacle and Carter 2011; Mellet et al. 2014; Beuscart et al. 2016). Taking the canonical form of a rating and a written review, OCRs combine aspects of personal judgment devices and impersonal devices (the building of a score), using neither expertise nor objectivation procedures (Mellet et al. 2014: 8). Instead, they constitute a form of democratization of judgment devices: valuing everyday consumers' opinions, they build on an egalitarian logic, as opposed to valuation devices based on the categories and points of view of critics, or professional associations and experts (Karpik 2010; Beckert and Aspers 2011; Mellet et al. 2014). OCRs offer both commensuration (through the building of an average score across reviews) and singularization (through the display of individual consumers' voices). Yet although OCRs do give voice to consumers, their calculation, categories and display are controlled by platforms.

Because of their widespread adoption, OCRs have significant effects on markets. They provoke reactivity (Espeland and Sauder 2007) from the evaluated sellers and service providers, who adapt their services and practices accordingly (Curchod et al. 2020; Kim and Velthuis 2021). Several studies observed the “overflow” (Orlikowski and Scott 2014) of online reviews on management practices in the hotel or restaurant industry (Scott and Orlikowski 2012; Cardon 2014; Orlikowski and Scott 2014; Beuscart et al. 2016; Kim and Velthuis 2021). Often, service providers will react to consumer comments, using OCRs as a form of reputation management (Beuscart et al. 2016; Wang et al. 2016; Kim and Velthuis 2021; Balsiger et al. 2022).

Besides these effects on management practices, the rise of OCRs also has effects on the overall functioning of market valuation. Through OCRs, lay judgments come to the fore, and studies have indicated that the *algorithmic apparatus* which configures these lay judgments tends to become more important than the *formulaic apparatus* of valuation often controlled by professions and “based on standards, principles, or prescriptions for achieving particular ends” (Orlikowski and Scott 2014: 883). The hypothesis here is thus that platform-generated valuation might eventually replace more traditional forms of formulaic valuation. Platforms are essentially seen as pushing a new form of valuation, based on rankings and OCRs.

The plurality perspective

More recently, a number of authors have put forward a characterization of platforms that insists more on their distributed nature and on their openness to a variety of valuation forms. Stark and Pais (2020), for instance, see platforms as an organizational form

based on co-optation, meaning that as intermediaries, they tend to integrate or co-opt “the energy and creativity of actors who are on the platform” (2020: 51). Vallas and Schor (2020) speak of platforms as “permissive potentates” which “exercise power over economic transactions by delegating control among the participants” (2020: 282). Most relevant with regard to the issue of valuation, Kornberger et al. (2017) point out the plurality of valuation on platforms. They conceptualize platforms as “evaluative infrastructures”, defined as an “ecology of devices that disclose values of actions, events and objects in heterarchically organized systems (such as platforms) through the maintenance of protocol²” (Kornberger et al. 2017: 85). Evaluative infrastructures include typical rankings and ratings, but also many other market devices and evaluation mechanisms (Kornberger et al. 2017: 85) – a plurality of “judgment devices” (Karpik 2010). By pointing at evaluative *infrastructures*, these authors maintain that the distinguishing characteristic of platforms is the “distributed” nature of valuation processes they put in place. Their illustrative case study of eBay shows three major characteristics of platforms as evaluative infrastructures. First, the plurality of evaluative devices that build an infrastructure allows for a “complex set of possibilities for making connections” (Kornberger et al. 2017: 89). The nature of valuation processes on platforms is thus distributed. Second, evaluative infrastructures importantly build on user-generated information and are generative, insofar as they “do something other than verify and validate the world as it is. Rather, they disclose the world that the digital traces and extensive data mining provide” (Kornberger et al. 2017: 89). Third, in spite of the distributed nature of valuation, platforms also exert control. While infrastructural disclosure may be endogenous, it is also influenced by what might be called the “hidden cursor” of platform organizations: the commercial imperative for platform owners to maximize revenues via traffic to their platform (Kornberger et al. 2017: 89). Plurality, thus, does not rhyme with equality.

In this article, we seek to combine these perspectives to advance the analysis of platforms’ evaluative infrastructures. Going beyond an opposition between platform/algorithmic valuation and non-platform (formulaic or other) forms of valuation, we look more closely at how a specific platform *combines* different forms of valuation which we conceptualize as belonging to different valuation *poles* (commercial, lay, algorithmic, formulaic), which are in tension with each other. Adopting a perspective attentive to the plurality of valuation forms, we are explicitly interested in exploring the tensions between these poles and the power relations that explain how such tensions are resolved

² The term “protocol” designates the form of decentralized control characteristic of platforms.

within platform infrastructure. How does the new configuration of digital valuation affect forms of valuation that have traditionally shaped markets? Do platforms tend to impose one form of valuation – lay valuation such as OCRs, or forms of algorithmic valuation – or do they rather seek to integrate as many valuation forms as possible? And how do producers/service providers deal with and react to the evaluative infrastructure generated by platforms? To address these questions, we look at the hotel sector and analyze the role of so-called online travel agencies (OTAs), in particular Booking.com, and the consequences of its rise in valuation of the hotel industry. In the next section, we present this case as well as the methodology used to analyze it.

Case and method

The hotel industry is one of the sectors most affected by the phenomenon of platformization. It was “disrupted” early on by OTAs, like Booking.com or Expedia, which have expanded their activity worldwide. These platforms can be categorized as e-commerce platforms and play the characteristic role of new digital intermediaries. OTAs incorporate typical OCRs, but as reservation portals, they are more than “just” review websites like Yelp or TripAdvisor. While OTAs also develop OCRs, their goal is not only to serve as a “judgment device” (Karpik 2010) for consumers, but to generate actual economic transactions in the form of hotel bookings. Indeed, the business model of OTAs is one of commissions – for each successful transaction they take a commission in the order of 12–15% of the price. The interest of the platform is thus to maximize the number of transactions, and the evaluative infrastructure is built to this effect. As we will see, the search results produced by the platform thus incorporate many more elements than just the average ratings of consumers.

The hotel industry is well suited for an analysis of the effects of digital valuation. Platforms have become significant players for hotel reservations; at the same time, the hotel industry is characterized by strongly established valuation forms controlled by professionals such as the stars rating system; finally, a few influent studies have analyzed the effects of algorithmic valuation on hotels and the proximate restaurant industry when OCRs were a relatively new feature (Scott and Orlikowski 2012; Mellet et al. 2014; Orlikowski and Scott 2014; Beuscart et al. 2016), which constitutes an opportunity to discuss and expand this literature.

Our study looks at the hotel industry in Switzerland, a country with close to 5,000 hotels³ and where tourism is a traditional and important sector of the economy. In terms of platforms, the focus is on Booking.com, which is by far the most important reservation platform in Switzerland, with a market share among OTAs of around 75%, representing almost 30% of all hotel reservations (Schegg 2019). Founded in 1996 and headquartered in Amsterdam, Booking.com is also one of the biggest OTAs worldwide and is today part of the publicly traded BookingHoldings, which also owns other OTAs and reservation platforms in other sectors. The great majority of hotels in Switzerland are present on Booking.com.

Data and analyses presented here are part of a broader research project on the reactions of the main players in the hotel market to the rise of platforms. In the course of this project, two researchers conducted 24 interviews with representatives of professional hotel associations and sectoral tourism organizations, hotel owners and hotel managers. All interviews were conducted between April 2019 and January 2020 and focused on the professionals' perceptions and reactions to the rise of digital platforms, in particular OTAs. We also conducted interviews with four IT service providers, a representative of a customer review aggregator company (RealReview⁴) and an official of Booking.com in Switzerland, amounting to a total of 30 interviews.

The interviews were transcribed and analyzed inductively by two members of the research team, using thematic coding with the help of the software Atlas.ti. For this article, the authors further analyzed the themes related to online consumer reviews, ratings and rankings, and qualification/valuation, in a back-and-forth process between data and theory, based on the literature on OCRs and platforms as evaluative infrastructures. In addition to this interview data, the analysis presented here also draws on an in-depth description of the evaluative categories of Booking.com and its technological affordances.

The evaluative infrastructure of Booking.com: Permissive hierarchical integration of valuation poles

Booking.com is an online travel agency: a search engine that seeks to create matches between people trying to reserve a room and hotels or other accommodation types. The search engine will provide consumers with a list of available hotels/rooms, for the entered time period and

³ According to a report by the Swiss Tourism Federation from 2020, 4,646 hotels. https://www.stv-fst.ch/sites/default/files/2021-06/STV_STIZ_2020_EN.pdf (accessed November 19, 2021).

⁴ The name of this company has been changed for confidentiality reasons.

place. The main component of the evaluative infrastructure is this search result list, which is actually a ranking. It is generated by an algorithm which will rank the hotels available on the chosen dates. We will first present the functioning of this ranking, before discussing other elements of Booking.com's evaluative infrastructure. Finally, we will discuss the different sources of the data that goes into constructing the various forms of valuation and their integration.

Ranking of search results

As is generally the case in the platform economy, the precise components and calculations that go into Booking.com's algorithm are kept secret (Gillespie 2014; Pasquale 2015; Just and Latzer 2017). However, the company does reveal that the algorithm takes into account two main aspects: elements related to the seller, and elements related to the buyer. First, the ranking is generated according to hotel "characteristics":

We look first at the hotel's performance – conversion and cancellation rates, also the reviews, etc. That kind of defines the performance of a single property [and] where we rank this property. Because [we are] commission-based, we want to have or give to the customer the best hotel where the chance is the highest that he/she will also book and have a good stay. (Booking.com official, January 13, 2020)

The ranking on Booking.com is thus very different from the rankings produced by review websites such as TripAdvisor or Yelp. The latter explicitly give ranking to hotels (e.g., #1 hotel in Paris, #5 pizzeria in Naples) which are exclusively based on OCRs and the same for each user. Booking.com does not produce such a numbered ranking. It generates search result lists – although those results are indeed always implicitly ranked since they appear as a list. As the interviewee quoted above stated, OCR is but one element that goes into the calculation of these results; hotel performance is another important element, as is data about the user. Contrary to review websites such as TripAdvisor, which function essentially as judgment devices (at least initially – some now offer the chance to make reservations), Booking.com is a transaction-based platform and the judgment devices it makes available and uses to generate search results are there in order to favor bookings.

Since searches on Booking.com for hotels in a given location will often yield dozens or even hundreds of results, the ranking greatly determines visibility. There are possibilities for hotels to "buy" a better ranking position, which will favorably affect their position in the ranking (through boosts, special deals, or by becoming a member of the "preferred partner program"). These are specific programs offered

by Booking.com. To be part of such programs, hotels pay: for instance, to participate in the preferred partner program, hotels will accept to pay a higher commission.⁵ However, these programs are not open to any hotel: a hotel needs to “perform” well to be able to participate in this. For instance, a hotel that does not get many bookings will not be accepted, because it will not help the platform to increase its revenue (interview with Booking.com official). In other words, a hotel that isn’t competitive on the platform will generally be ranked low and therefore be less visible (which is likely to make the hotel even less competitive). The possibility of participating in these programs is further limited by the fact that the platform restricts the number of hotels that can be part of them, in any given location.

Second, according to the Booking.com representative interviewed, the ranking is also personalized with regard to the customer, using data that is available to the platform. For users that have a Booking.com account, this data includes their detailed search and booking history, which provides information about their habits and preferences; for users without a profile, the algorithm uses more general data that are available (such as the country where the user is searching from, search terms entered in Google, etc.). This customization of results means that the ranking is technically never the same for two different customers.

Plurality of evaluative infrastructure

So far, the description gives the impression of an evaluative environment that is strongly directed by the platform. However, the algorithmic ranking is by no means the only component of the platform’s evaluative infrastructure. There are two important additional features that need to be added to this description: first are all the various forms of differentiation or criteria of valuation/evaluation that are integrated into the platform and made visible. A look at a search result list (see Figure 1) immediately reveals their diversity. Besides the names of hotels, one indeed finds many different categories that allow users to differentiate offers. User ratings are an important component of this. There is an overall score for a number of subcategories: staff, cleanliness, location, quality/price, comfort, facilities, wi-fi. Each hotel has such ratings; and depending on the hotel (and possibly also the users), different aspects will be made visible. In addition to that, there is a great variety of other more or less objective information: stars, price, location (distance to city center or other points of interest), conditions of reservation, type of establishment,

⁵ The program and its conditions are explained on Booking.com’s Partner Hub website: <https://partner.booking.com/en-us/help/growing-your-business/increase-revenue/all-you-need-know-about-preferred-partner-program> (accessed April 15, 2021).

type of bed, facilities such as pool, parking, spa, popularity with different types of customers, etc. Second, the platform offers its users the possibility to customize their search results according to all of these criteria. Built into the platform infrastructure are numerous possibilities to do so, the most important being (a) the possibility of changing the ranking of search results by looking at hotels by price or by customer rating, other aspects or combinations thereof; (b) the possibility of filtering the results according to specific criteria; (c) the possibility of looking at a map view, scroll over it and select hotels this way. If they wish, users can completely change the search results, according to the evaluative criteria they prefer.

Overall, this in-depth look at the Booking.com interface reveals the centrality of evaluative criteria. Multiplying categories of qualification of all sorts, the platform is first and foremost an evaluative infrastructure. The algorithmic ranking, developed by the platform to favor potential matches, is an important tool therein. But it is integrated into a much broader infrastructure with a multiplication of possibilities for customers to navigate this space and evaluate the accommodation offers, according to a diversity of evaluative criteria and the corresponding categories. As in the eBay case analyzed by Kornberger et al. (2017), the evaluation is dynamic and open-ended; the platform does not want to provide a definitive rating or ranking “but rather a complex set of possibilities for making connections” (Kornberger et al. 2017: 87).

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The image shows two screenshots of the Booking.com interface. The top screenshot displays search results for hotels in Zermatt. On the left, there are filter options under 'Filter by:' including 'Your Budget (per night)' with ranges like CHF 55 - CHF 110 (3 results) and 'Popular Filters' such as Spa (42), Hot tub/Jacuzzi (37), and Breakfast Included (67). The main results list two hotels: 'Relais & Chateaux' (Wonderful 9.1, CHF 406) and 'Hotel Signature Collection' (Excellent 8.9, CHF 266). The bottom screenshot shows the hotel page for 'Relais & Chateaux', featuring a 'Not usually available - you're in luck!' message, a 'Great for Two Travelers' badge, and a review snippet: 'Everything was exceptional and superb! :) From the Main Train Stn Zermatt we were picked up with a free shuttle bus service to the hotel. The staff responded ...' with a 'Singapore' location tag and an 'Excellent location!' rating of 9.6.

Figure 1. Example of search results (above) and hotel page (below) on Booking.com. **Notes:** Above on the left, some of the different filters that can be used to adapt search result list. On the list, review scores are prominently displayed. On the image below that, one can see the indication “great for two travelers”, the yellow thumb symbol that stands for the preferred partner program, and the highlighting of specific comments.

Two types of data sources

Data that goes into building evaluative categories come from two types of sources. On the one hand, there is information that is entered by hotels themselves, often based on some type of objective criteria.

Elements such as room size, facilities (is there parking, a pool, a spa) or stars rating are objectively verifiable and sometimes officially sanctioned features that are part of the evaluative infrastructure offered on the website. On the other hand, there is user-generated content that becomes part of the evaluative infrastructure, often through the intermediation of calculative devices built by the platform. After their stay, Booking.com automatically sends an email to customers, inviting them to review the establishment they stayed at. Users are asked to rate a number of separate dimensions (staff, cleanliness, location, quality/price, comfort, facilities, wi-fi) using a four category “smiley scale” and to leave positive and negative comments. Booking.com aggregates these reviews into an overall score and into separate scores for the different dimensions, using a scale from 1 to 10.⁶ The scores are an essential part of the ranking and are prominently displayed on the search results list. Furthermore, the reviews⁷ are also used to generate additional categories that become attributed to hotels as forms of valuation – ideal for couples, great location, etc. – which will appear prominently on the hotel’s page (see Figure 1). It is here that the evaluative infrastructure is generative of new valuation categories (Kornberger et al. 2017), distinctive forms of digital valuation based on aggregated and algorithmically calculated user data.

Poles of valuation

The description of Booking.com’s infrastructure and its affordances has highlighted the plurality of evaluative criteria that one finds on the platform. The platform generates new evaluative criteria and categories. Inviting consumer to leave feedback through the use of a pre-formatted questionnaire (and thus “incorporating the kinds of participation that the internet itself made possible” [Gillespie 2018: 15]), Booking.com produces online consumer reviews, which become visible on the platform as grades given in various categories as well as in the form of commentaries. Furthermore, based on these reviews but also on performance measures and on information that hotels themselves enter into the platform, algorithms produce new categories as well as scores and rankings. But these forms of valuation, generated by the platform itself and algorithmically refurbished, are not the only evaluative criteria that are visible on Booking.com. At the same time, all kinds of already existing evaluative criteria (stars, room facilities,

⁶ In this transformation from a 1–4 to a 1–10 scale, it appears that Booking.com tends to increase review scores, leading to more positive ratings overall compared to other platforms (Eslami et al. 2017). It could be that this calculative increase of scores helps the platform increase the number of reservations.

⁷ Probably along with other data such as reservation histories.

labels, etc.), which originate outside of the platform, are integrated into the platform and become part of its evaluative infrastructure. The dazzling plurality of evaluative criteria that is visible on the platform is a result of this process of integration.

Different forms of evaluation (of the evaluative infrastructure) belong to four different valuation “poles” (see Figure 2) which represent different types of judgment devices. Speaking of poles allows us to distinguish ensembles of devices responding to different principles and driven by different actor types, which occupy distinct positions in the evaluative space. It also allows us to conceptualize the interplay and overlap between these different positions that structure the evaluative infrastructure of platforms and are often in tension with each other. The *lay* valuation pole is the characteristic form of digital valuation relying on OCRs, which become visible on the platform in the form of grades (both aggregated and for specific categories) and in the form of comments. The actors behind this pole are consumers or users. The “*formulaic*” pole (using Orlikowski and Scott’s (2014) expression) refers to more or less objective evaluation criteria such as room size, facilities, services offered, etc. The stars rating, developed and usually controlled by national professional or sectorial associations, builds on such criteria to distinguish between different hotel classes. The *commercial* pole refers to evaluative criteria that are linked to the commercial and marketing practices of hotels. This includes special deals that are sometimes put forward and that may also be linked to consumer fidelity programs (on Booking.com, returning customers can obtain so-called “Genius levels” which give them access to special offers). Another example is the *preferred partner program* where hotels pay higher commissions to be better ranked. The commercial pole also includes qualifications of goods and services that aim to distinguish the offer by creating singularities designed to differentiate oneself from competitors. In the case of Booking.com, brands or quality labels are examples of evaluative criteria used to singularize hotels. The main actors behind the commercial valuation pole are thus hotels themselves. *Algorithmic* valuation, finally, refers to algorithmically generated rankings and categories produced by the platform. This valuation pole draws on the three others as it incorporates aspects from them into the calculation of new valuation forms. While lay evaluation is a critical component of algorithmic valuation, the latter cannot be reduced to a calculative operation of solely transforming lay judgments. Contrary to what is suggested by Orlikowski and Scott’s article (2014), which opposes algorithmic to formulaic evaluation, algorithmic valuation actually also draws in aspects from the commercial valuation pole (such as price, in particular) and potentially formulaic aspects (for instance, facilities).

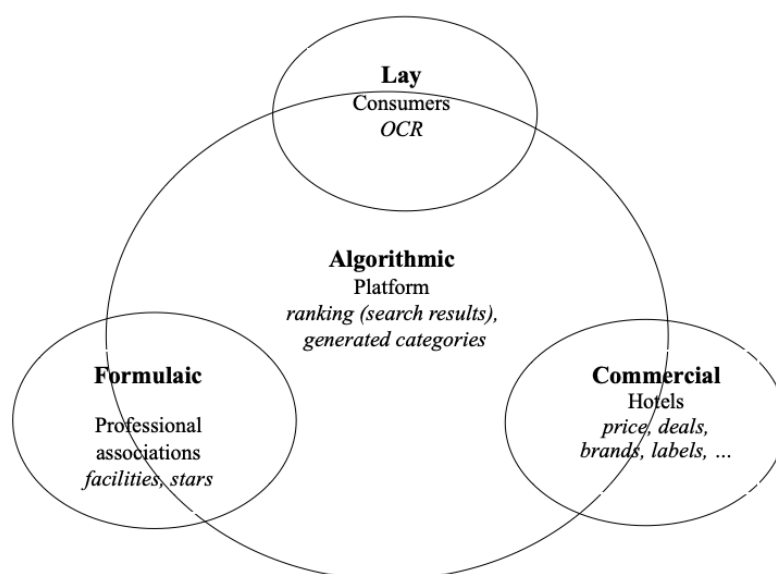


Figure 2. Valuation poles on Booking.com’s evaluative infrastructure.
Source: Authors’ own work.

Permissive hierarchical integration

As a “pivotal platform” in the hotel industry, Booking.com has the ability to “manipulate the processing and presentation of information to its own commercial advantage” (Lynskey 2017: 9). Its gatekeeper status derives from the control it exercises over “the flow and accessibility of information and structuring [of] the digital environment” offered on its platform (Lynskey 2017: 11). This has consequences for the way that the different valuation poles are made visible on the platform. The evaluative infrastructure of the platform mediates the valuation poles on three different levels.

First, by assembling evaluative criteria belonging to the different valuation poles, Booking.com has control over how and what is integrated, channeling what will be visible and what won’t. As the description of Booking.com’s infrastructure shows, the platform is very open with regard to this. It acts as a sort of “aspirator” of valuation forms and allows them to become visible, accessible, and searchable on its infrastructure. It is permissive and refrains from tightly controlling this information. This precisely corresponds to the characteristic coordination form of platforms, which is not based on tight, hierarchical control, but on distribution (Kornberger et al. 2017) and co-optation (Stark and Pais 2020). However, this should not hide the fact that this permissiveness is also a form of power exerted by the platform: it is at the discretion of the platform. To use Vallas and

Schor's (2020) apt characterization, platforms are "permissive potentates".

Second, the platform also mediates the valuation poles by setting algorithmic valuation as the privileged valuation form in the evaluative space. The ranking is the default option of search results, and the platform fully controls the way review scores are displayed and even calculated. There is thus a built-in hierarchy between the different valuation poles visible on the platform: the user who wants to privilege other criteria such as stars has to become active and adapt the search criteria or the selection. To be sure, this is enabled and even facilitated by the platform; its evaluative infrastructure is clearly plural in this sense. But the default option is always the one based on the platform-generated ranking (the algorithmic pole). The mediation operated between the different valuation poles is thus hierarchical and privileges one pole over the others. Thus the functioning of the platform will "reduce singularities to create comparabilities" (Esposito and Stark 2020, 127), in particular through the algorithmic pole. It should be added that the lay pole – which is also generated by the platform, albeit in a decentralized way – equally plays a privileged role. Compared to criteria belonging to commercial and formulaic valuation, lay valuation is particularly prominently displayed.

Finally, the platform mediates the different valuation poles not only by allowing them to be displayed and by curating the ways in which they are displayed on its infrastructure, but also by integrating aspects of lay, commercial and formulaic valuation into algorithmic valuation. The platform uses criteria from different valuation poles to create new ones. In this sense, the plural evaluative infrastructure is generative: the rankings or the new valuation categories generated by the platform (such as "ideal for couples") also integrate aspects from the other valuation poles. Search result lists do not only take into account review scores but also other elements such as facilities, price, deals, etc. In addition, these are highly personalized and depend also on the user – his/her data profile as it is known to the platform, along with reservation history. The comparability created by the platform is user-specific. Potentially this may lead to a kind of deterministic recommendation – users get to see the same or at least similar hotels, as is the case with recommendation algorithms (Seaver 2019).

Overall, Booking.com's plural evaluative infrastructure is thus mediated by the platform itself and takes the form of a permissive hierarchical integration of different valuation poles. Algorithmic valuation is clearly privileged and offers a kind of a summary of the other valuation forms; a platform specific judgment device that becomes dominant and subordinates the judgment devices controlled by other actors – be it the professionals or independent experts evaluating hotels, or the hotels themselves with their pricing but also with their marketing strategies (in Karpik's (2010) terms, *dependent*

judgment devices). At the same time, the integration is permissive: it gives users the option to search for specific criteria and thus lets them customize their use of the platform at their will. It is in this hierarchical yet permissive integration of valuation poles that lies the evaluative innovation of platforms.

Destabilization of the evaluative landscape through digital valuation

In this final section, we analyze, through interviews with hotel owners and managers, the effects of the increasing significance of Booking.com (and other reservation platforms) for established routines of valuation. The interviews show that the platform provokes destabilization around three main issues: the opacity and resulting volatility of algorithmic valuation; the weakening of formulaic (in particular professional) valuation through the dominance of algorithmic valuation; and the issue of online singularity, i.e., the relationship between valuation and singularity on digital platforms. Hotels develop varied responses to each of them.

Destabilizing issue #1: The mystery of algorithmic valuation

In spite of the fact that Booking.com's evaluative infrastructure assembles different forms of valuation, reactions expressed by hotel managers clearly point to the centrality of the ranking, and therein of the review scores. From Booking.com's perspective, evaluation by customers is seen as promoting market transparency; rather than relying on the selection and advice of travel agents and professional experts, people can now do it all for themselves. From the company's point of view, developing rankings that maximize a potential for matches is beneficial to everyone:

I think in the end it's just a customer need, and I think we tried to put the customer at the center of everything we do, and when we see that this is a need and that this helps the customer to make a decision, then we will focus on that point. (Booking.com official, January 13, 2020)

But hotel owners and managers mostly do not see it that way. In their view, rankings and in particular the way the platform uses customer evaluation to rank hotels, are anything but transparent. From their perspective, the centrality of algorithmic valuation creates volatility and insecurity. Many of them criticize the opacity of the algorithm and

speculate about what goes into it.⁸ The following excerpt is a typical expression of this:

For [Booking.com], what's important is the number of rooms that one makes available, and especially all year. If you give a lot of rooms in low season and few in high season, then you are automatically worse than other hotels of the region. [...] The second criterion is price comparison. The third criterion is the number of matches, the indicator of success. [...] This is your rate of success, and if it's bad you will be low on the ranking with bad grades. And it will always be the bad grades that appear first. The bad comments and the bad grades. [...] In the comments they will make visible the one that is related to the customer's criteria, to make sure he/she doesn't pick you. (Hotel manager, June 12, 2019)

This hotel manager is convinced that Booking.com manipulates overall scores for hotels that do not make many rooms available on the platform, and that the website makes negative reviews visible for hotels that are already ranked low. In his view, the rankings and the score are closely related: while he agrees that rankings are based on more than just OCRs, he also believes that the reviews made visible by the platform depend on the hotel ranking. While not all hotel managers share this level of suspicion, most agree that OCRs are a crucial issue. For instance, a manager tells us that while a difference between average scores of 8–8.5 does not differentiate hotels much, scores approaching 9 and especially above 9 become a clear distinguishing feature. Having a grade of 9 and above allows hotels to charge more for their rooms.

Given the importance they attach to OCRs, it is not surprising that customer review management has become an important aspect of hotels' activities. They have to keep track of reviews and will often post answers to them. Booking.com's "extranet", which is the interface to which hotels have access, actually provides them with a number of tools for review management:

It's the system they can enter, where they have a lot of reports. Not only the reviews. We also treat them with machine learning, we read the reviews and give them reports like "Ok these are the things that have been talked about most, look at that", so we also give them some recommendations, and every hotel has access to this. (Booking.com official, January 13, 2020)

⁸ According to a recent survey study, six Swiss hotel managers out of ten consider that OTAs do not communicate in a transparent and understandable manner how the rankings are established, nor how they can influence their position in these rankings (Schegg 2019).

Even with the help of such tools, management of OCRs takes up a lot of time and resources for keeping track and responding to reviews, especially because hotels are present on many websites doing OCRs. Aggregation services such as RealReview track reviews on all the major review websites (such as TripAdvisor, Google or Booking.com) in real time. Gathering this data, they use different machine learning technologies to produce daily scores but also more refined information such as what aspects customers talk about negatively or positively. Bigger hotels especially subscribe to such services, which summarize reviews and thus facilitate customer review management. One hotel manager we interviewed revealed that his hotel had even outsourced the activity of writing and publishing replies to customer reviews, working with a local service provider.

Besides keeping track of reviews and replying, in order to manage reputation (Kim and Velthuis 2021), hoteliers use OCRs to monitor their offers and services in order to improve future feedback. They may for instance use specific reviews in workforce managing, to motivate the staff, improve specific points or respond to critiques (observed already by Orlikowski and Scott 2014). But there are also more proactive strategies of review management that seek to secure better review scores. Most hoteliers solicit their clients directly and ask them to leave reviews at the end of their stay. Often, they assume that it is not the positive reviews that matter so much as the high number of reviews, as a mass of reviews will automatically drown out the few very negative ones:

It's not even about "Please give us a good review", it's just "Review us – with a good grade we hope". The more comments we get, the more the bad one, the one that hurts us but that doesn't reflect reality, will be diluted, so it won't impact us that much. (Hotel manager, July 2, 2019)

Not all hoteliers trust this mechanism, though; many develop ways to incite customers to leave good reviews. For instance, by offering advantages to customers who book through Booking.com:

On Booking.com, there are many more reviews because each customer automatically receives a request for evaluation, so the customer puts a comment. I know that there are hoteliers who systematically upgrade people who come via Booking.com, because of the reviews. (Hotel manager, May 14, 2019)

Without admitting the use of illicit practices, many hoteliers also point out how easy it is to cheat by writing fake reviews or purchasing them – a phenomenon that has long been studied in the restaurant industry (Luca and Zervas 2016).

All these techniques of review management aim at positively influencing OCRs, which hotels perceive as a crucial part of the digital evaluation infrastructure and of the ranking produced by Booking.com's search engine. But effects of the practices are uncertain; they are more a necessary reaction to the digital evaluative infrastructure and a testimony to its destabilizing effects than a sure path for a better position.

Destabilizing Issue #2: Weakening of formulaic valuation

Much of the literature on digital valuation has focused on the centrality of OCR and its tendency to gradually displace traditional forms of valuation. In this process, valuations built on OCRs come to replace, through competition and increased use, the formulaic categories of professional valuation. This process has been described in a number of studies on the hotel and restaurant industries (Mellet et al. 2014; Orlikowski and Scott 2014; Beuscart et al. 2016). Building on an egalitarian logic as opposed to an expert one, Booking.com's review scores also have such effects. OCR scores compete with the traditional stars rating, to the point where some hoteliers and representatives of professional associations speculate that the stars rating could soon be rendered obsolete:

Sometimes I wonder whether customer reviews are going to replace the categories somewhat. In the sense that I think that a hotel which is a bit special could, in the future, not have a star-classification but simply an excellent review score which would make it an interesting hotel to visit. (Hotel manager, May 14, 2019)

I personally think that the importance of these stars will diminish. [The professional association] will not say the same thing, but certain hotels already say "We distinguish ourselves through our concept or through additional services, not through stars". They also say "Stars are too strict" or "They do not correspond to our times". (Representative of a sectoral organization, June 18, 2019)

The views expressed by these two professionals point to the increased importance of OCRs for hotels. They diminish the relevance of stars rating which seems old-fashioned and rigid. Both interviewees look at it from the point of view of hotels, for which the stars rating has become less important. Others will point to the fact that the two classification systems are based on very different logics and therefore complementary, but these two comments show that, at least for specific hotel categories, the new OCR based ratings can render stars rating irrelevant. In addition, OCR based ratings create new singularities: hotels that have a very high overall grade will stand out from their competitors. For them, such a distinction can be much more useful

than having a stars rating and might be privileged. This is not the case for all hotels, though, since the majority of them will have more average OCR ratings. The OCR ratings therefore also create new hierarchies, and as a consequence, not all hotels will appreciate them in the same way.

Interestingly, professional associations and sectoral organizations recognize the specific algorithmic valuation forms of platforms, and use them as an element in the construction of professional forms of qualification and valuation. The case in point here is the decision by the Swiss tourism industry organization to use the aggregated scores produced by RealReview as a criterion for inclusion into promotional campaigns on its official website, with the agreement of the professional association. Only hotels that have at least an 80% satisfaction rate (a score of at least 8 out of 10) are qualified to participate in this promotion. By integrating this form of lay judgment into categories developed by professional organizations, the legitimacy of OCRs is reinforced, as revealed by this statement from a representative of a sectoral organization:

We are conscious that what other customers say is more and more important. That's why we work with RealReview. [...] It makes it possible for us to measure a bit the impact of already existing customer satisfaction. For hotels, but also for us it was important to be able to integrate this aspect of customer evaluation. (Accommodation marketing manager of a sectoral organization, May 21, 2019)

The rise of aggregators such as RealReview attests to the power of platforms and their characteristic valuation forms, i.e., the lay and algorithmic poles of the evaluation space. We see how aggregated OCR scores become a major component in assessing hotel qualities. Hotels and hotel associations integrate them into their formulaic or commercial valuation strategies. For some hoteliers, this undermines the very idea of professional valuation. As in cases documented for the tourism industry (Beauvisage et al. 2013; Cardon 2014; Beuscart et al. 2016), these hotel managers do not think that ordinary customers can really judge the quality of a hotel; such ratings should not be recognized by the profession:

What I find pathetic – and I wrote this to [the professional association] – what I find really pathetic is that [the sectoral organization] is using these evaluations, through RealReview. That's a scandal! [...] What's bad is that the association that establishes professional norms, that has professional auditors who visit the establishments, puts this into the balance and decides that the most important things are customer evaluations by clients who don't know the evaluation criteria, who don't know anything at all. That's a disaster! It makes me say that they [the professional association] are

worthless. Because they don't control the evaluation, they put in place a professional system and then afterwards they integrate things that have nothing to do with it, where one doesn't even have proof that commenters actually were customers. They take these evaluations without thinking. Why? Because they want to appear modern. (Hotel manager, June 12, 2019)

Similarly, another manager, in charge of a luxury hotel, denies the competence and legitimacy of customers to judge hotel quality:

A client who always goes into two-star hotels and then once goes to a five-star establishment because he/she received a gift, he/she cannot evaluate a five-star hotel like a professional. Professionals know the expectations. They also have their personal opinion, but ... they have a catalogue of criteria they have to refer to. That's why [comments and customer scores] cannot replace this. (Hotel manager, June 5, 2019)

But not all agree with this view. One interviewee, a hotelier who is also a member of the national association's executive committee and of the commission in charge of updating the evaluation criteria, sees this integration of OCRs into professional valuation categories much more positively:

I think I'm the only one to think like that today, although it's gently emerging. What I explained to my colleagues in the [evaluation] commission is this: we nowadays have an important mass of comments per establishment. As for statistics, we know that it takes a certain time for statistics to have value, and I think it's exactly the same thing, after a certain number of comments, one can estimate that this value is credible and so one can integrate it into a system, and for instance say that all the hotels that are part of a given category need to have a minimum grade of 8. (Hotel manager, July 2, 2019)

This hotelier makes an argument of complementarity. He admits that customer reviews have a different focus than stars: rather than objective criteria such as room sizes or facilities, customer reviews reflect the quality of the service. But he sees it as positive. Moreover, a high number of reviewers is supposed to give such OCR scores an objective quality (Mellet et al. 2014: 61), which legitimizes their integration into professional valuation categories. Integrating OCR into other forms of valuation therefore improves their overall quality.

That the weakening and undermining of formulaic valuation by algorithmic valuation is perceived unequally reveals fault lines within members of the profession and the professional association between those pursuing a kind of "defensive professionalism" (Muzio and Ackroyd 2005) critical of algorithmic valuation and others who welcome it. Indeed, it can be beneficial for hotels to altogether bypass

the professional valuation categories in favor of the less rigid platform-based valuations. One hotel manager, for instance, told us he explicitly refused to apply for a star classification, which would put the hotel into an undesirable three-star category, because he prefers the less rigid classification one can find on Booking.com combined with the branding of belonging to a specialized chain:

Hotel manager: We don't have a star classification. The reason is simply that we would have fewer stars than we feel corresponds to our quality. [...] The hotel is actually a four-star hotel, in terms of quality, service, rooms.

Interviewer: And on Booking.com you appear as a four-star hotel.

Hotel manager: Yes, but this is something they do themselves. We don't have four stars from [the professional association]. The problem is that when one wants to have a four-star rating, you need room service for instance, I think you even need a pool, and we don't have that. Which means we would be three-stars but we don't want that and that's why we don't have any stars at all. (July 11, 2019)

Destabilizing issue #3: Singularity in times of digital valuation

As we have seen, the platform creates new (lay and algorithmic) valuation forms which leads to new hierarchies and also new forms of singularities that become visible on the platform infrastructure (such as very high ratings, new algorithmically-generated stars rating, or other categories). According to Karpik (2010), singularities are goods and services that are multidimensional, of uncertain quality and incommensurable, and therefore cannot easily be grasped by standard methods of qualification. The relationship between singularities and valuation is always ambivalent. For producers, singularization is the ultimate form of valuation (Callon 2021); so-called "dependent judgement devices" (Karpik 2010) in the form of branding and marketing strategies allow them to distinguish their offer from all the others and make it unique. There is only one *Lausanne Palace*; a specific hotel in a specific town is never the same as any other hotel. On the other hand, judgment devices created by third parties (such as guide books) aim at reducing singularities in favor of comparability, often by creating scales, ratings or rankings that make it possible for consumers to compare different offers (Karpik 2010; Beckert and Aspers 2011). In the online environment of digital valuation, although algorithmic valuation does create new categories that can help hotels distinguish and singularize themselves, it also creates comparability along a nearly infinite number of criteria – leading to a state of near all-encompassing commensuration across hotel types as well as across geographical space. Overall, the trend is to make singularities less visible and to favor the algorithmic rankings. For hotels, this means

that they are in a situation of heightened competition, which is another destabilizing effect of digital valuation.

However, as we have shown, the platform evaluative infrastructures are plural and permissive. Hotels use this permissiveness to revalue forms of commercial valuation building on singularity. In fact, singularization is frequently used as a means of bypassing platforms and increasing direct bookings (through the hotel's website, by email, phone or walk-in) by developing "value packages" such as special offers (Balsiger et al. 2022). Hotels seek to lure customers away from platforms by offering values that are only available through direct booking. With the rise of new forms of digital valuation and the increasing dominance of reservation platforms, such value packages have become crucial tools to divert consumers away from platforms. Thus, if the rise of reservation platforms has brought with it new forms of lay and algorithmic valuation, this process does not make commercial valuation forms built on singularity disappear. On the contrary, our observations indicate that it has actually led hotels to develop and promote various forms of valuation based on singularization.

While these valuation forms are used to encourage direct booking, they also find their way back on the platform when hotels make alternative forms of qualification and valuation visible on platforms through hotel *names*. To illustrate this point, we refer back to the manager of the hotel that decided not to apply for a star rating because he prefers the less rigid Booking.com classification. He went on to tell us that this is possible because of the hotel's brand, as the hotel belongs to a small chain of hip urban boutique hotels, recognizable by its name:

The brand of course helps us in this [not needing a star rating]. As an individual hotel we probably wouldn't be able to afford this. The brand is sufficiently known in the German-speaking area and people know that it has a certain level of quality. (Hotel manager, July 11, 2019)

The chain's brand is a valuation that becomes a substitute for a star rating. Chains are part of those alternative forms of qualification and valuation that hotels have been pushing since the rise of OTAs, in order to increase the proportion of direct bookings. At the same time, because the brand is integrated into the very name of the hotel, this type of valuation is also clearly visible on booking platforms.

Rendering alternative forms of valuation visible on platforms is something that we also observe beyond those chain brands. Hotels use quality labels to attract customers through alternative, often "offline" channels in order to bypass reservation platforms. At the same time, however, they also seek to make these quality labels visible on the platform. But categories to make them visible do not readily exist on

the platform. What hotels do, then, is include them in the very name of the hotel. A hotel will change its name to Hotel X and Spa, Biker Hotel Y, or *Relais & Châteaux* Hotel Z to stand out from the competition on the platform. In this way, certain quality labels, some of which would otherwise not be visible on the platform because the platform does not integrate them, appear online at the instigation of hotel managers. For instance, one hotel manager, who advertises his hotel on Booking.com as Hotel X *Relais & Châteaux*, explains the importance of this prestigious French label:

Relais & Châteaux is one of the few independent labels that really puts the emphasis on quality, on cuisine. It's a good stamp for asserting the quality of a hotel. [...] We have a lot of clients who book through *Relais & Châteaux*. That's great and very interesting for us. (Hotel manager, June 5, 2019)

From a similar perspective, another manager adds the qualification “Art Boutique Hotel” to his hotel’s name on Booking.com:

We are a *hôtel de charme* in the mountains, chalet type or boutique hotel. Every room is different. We put “Art Boutique Hotel” [on Booking.com] because my wife has always been a little bit of an artist and a lot of the paintings and many of the furniture pieces are made by her. (Hotel manager, July 2, 2019)

The practices we observe here – naming one’s hotel using a label or another quality category – are reactions to the destabilizing effects of digital valuation. They go beyond using the permissiveness of the platform, since they bring in categories that would otherwise not be visible. Such forms of singularization are a form of “gaming” the platform through a creative use of its affordances, which shows that hotel managers have achieved a certain mastery of this. More generally, it shows how branding, marketing, and other forms of techniques of singularization, persist in the age of digital valuation. They are used to bypass digital valuation, but they are also brought into the platform infrastructure.

Discussion and conclusion

Markets are characterized by different kinds of valuation that preexist the rise of digital platforms. These valuations are often controlled by professionals, experts, taste makers or other third parties (Karpik 2010). The rise of digital platforms and their user-generated as well as algorithmic valuation challenges the role of these other forms of valuation, and modifies market valuation (Mellet et al. 2014). In this article we seek to advance the analysis of valuation on platforms through a case study of Booking.com. Previous studies have either

focused on the role of lay valuation through online consumer reviews – showing how they increasingly compete with and displace traditional forms of valuation by experts or professionals – or have described platforms as plural evaluative infrastructures. We draw on both these perspectives to characterize the evaluative innovation that platforms constitute. Our analysis suggests that digital valuation on platforms is constituted by a combination of valuation poles: lay, commercial, formulaic and algorithmic valuations coexist on digital platforms and are all highly visible, searchable and comparable. However, the combination is structured by what we call “permissive hierarchical integration”. Pursuing the goal of maximizing the number of potential transactions, the platform decides which qualities become visible, how they are displayed, and which ones are shown by default. It privileges lay and especially algorithmic valuation, the latter summing up the other valuation forms and specifically customized to individual consumers’ data profiles. At the same time, evaluative criteria are plural: users have the option to search all possible criteria and use the infrastructure at their own will, making the integration of valuation poles not only hierarchical but also permissive.

Because an increasing number of transactions take place on platforms, the digital evaluative infrastructure that they create destabilizes the overall valuation landscape. It provokes volatility for hotels that particularly struggle with the lack of transparency of algorithmic valuation and the centrality of customer ratings therein. Algorithmic valuation also tends to compete with and even undermine formulaic forms of valuation, as shown by early studies on OCRs in the tourism industry (Beauvisage et al. 2013; Cardon 2014; Orlikowski and Scott 2014; Beuscart et al. 2016). Yet not all hotel owners or managers see this as problematic: parts of the profession even actively *support* algorithmic and lay valuation in its competition with formulaic valuation. They see value in integrating aggregated customer review scores and find advantages in the less rigid valuation categories offered on platforms. Finally, the digital evaluative infrastructure also destabilizes the valuation strategies of hotels seeking singularity. Although the evaluative infrastructure is permissive and customizable, it also constitutes an environment of all-encompassing comparability and commensurability. This goes to the detriment of the creation of distinctive, singular qualities. But we see that such valuation strategies of singularization do not disappear. While hotels mostly use quality labels or brands as a way to favor direct bookings, they also find ways to make them visible on the platform – for instance by adapting their name. This is, of course, a somewhat artisanal way to make certain specific forms of valuation visible on the platform. Quite clearly, this rather rudimentary instrument illustrates both the power and the allure of platforms (Kenney and Zysman 2016).

This study contributes to better understanding how, in digital valuation, different forms of valuation are in play. It goes beyond a view that sees digital valuation only as a threat to traditional, especially formulaic valuation, to show how digital platforms lead to a reassembly of different forms of valuation that belong to different valuation poles. Digital valuation thus contains all these other forms of valuation. And while it does increase the weight of lay valuation (through online consumer reviews), this does not make other valuation forms disappear. Our study shows, indeed, how the algorithmic valuation produced by the platform also incorporates commercial and even formulaic valuation.

Two further aspects of the characteristic interplay between valuation poles in digital valuation processes are particularly noteworthy. First, the use of valuation poles and their interplay is fundamentally shaped by the platform's commercial interests. The platform's main interest is to maximize concluded transactions, and it will seek to assemble and tweak valuation poles in its favor. This is achieved through an algorithmically produced search result list, which is supposed to show the most likely matches first for a given customer. This search result list, which appears as a ranking, is thus guided by a commercial logic of maximizing transactions. This is a difference from review websites like TripAdvisor or Yelp, on which the seminal studies of digital valuation were based (Jeacle and Carter 2011; Scott and Orlikowski 2012; Mellet et al. 2014; Orlikowski and Scott 2014). Such review websites produce ratings but without making transactions; they are "only" judgment devices. In the case of Booking.com, the search results, which prominently display OCRs, also appear as a sort of judgment device of hotel qualities and therefore of the hotel market at large. Yet they first and foremost serve to produce transactions, making Booking.com both judge and jury. This aspect is most problematic for hotels, as algorithmic uncertainty and its stakes are heightened.

At the same time, hotels find other means to pursue their commercial interests in this evaluative landscape, which are also facilitated by the platform environment. The goal of maximizing transactions leads the platform to allow manifold possibilities for users to search according to other criteria of evaluation. It is not a fully commensurate space with rankings that have overwhelming force. The plasticity of the interface leaves space for multiple manipulations, from which hotels can also benefit.

Second, the study enriches the literature on digital valuation which so far has failed to distinguish between the rejection of lay valuation and algorithmic valuation by putting them together in the category of "platform" valuation. Our study finds that when lay valuation is opposed to formulaic valuation, algorithmic valuation becomes somehow acceptable: the mass of OCRs aggregated by algorithms is

seen as statistically relevant.⁹ It shows the ambivalence of market actors who are forced to play along with the rules of the game, when confronted with the plural evaluative infrastructure of platforms.

This type of case study invites further studies that look into valuation on different kinds of platforms and in different markets. How do other platforms (for instance for food delivery or music streaming) handle the integration of a variety of valuation poles? Is formulaic and commercial valuation present on other platforms, and to which extent is it challenged by lay and algorithmic valuation? It is likely that whereas all platforms function as evaluative infrastructures, the way the integration of valuation poles is structured will differ. In turn, this differential integration affects the forms of reactivity of market participants and their possibilities of singularization when facing the platform infrastructure.

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⁹ We would like to thank one of the reviewers for pointing out this observation.

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