

Rio-H: the city history revealed through a web-based system

José Ripper Kós

PROURB – Post-Graduate Program of Urban Design - Universidade Federal do Rio de Janeiro, Brazil

Historians have relied mostly in descriptive narratives to convey the outcome of their research. This paper aims to overview the debate between historians who are narratives champions and those who support the analysis of historical structure, which evidences some shortages in both currents and the need for exploring new forms of historical representation. The historian Peter Burke, for example, defends a search for a third option based on contemporary literary experiments, which would synthesize both currents in a new narrative form. Although Burke does not mention electronic publications, this paper relates his hypotheses to those new forms of representation provided by computers.

Digital tools have been increasingly used, in the last decades, for the study and representation of the city history. As the available instruments develop and the researchers become more familiar with them, their use turns out to be more effective and provides richer results. This paper aims to explore the use of information technology, particularly 3D models and databases, for the city history research. Rio-H is presented as a digital alternative for the representation of the city history. The tool developed as a prototype is grounded on 3D digital models representing the urban configuration of Rio de Janeiro in different periods of its evolution linked to a database of a great diversity of historical documents. Thus, the city history is accessed through 3D models' images of the historical sites. The users relate the city they know to the site which was the stage of historical events, relating the information from the past to the space they have experienced in the city. The prototype development is based on the assumptions that this process of retrieving historical information connected to the city spaces facilitates the understanding of the past culture.

Historians and narrative: searching for a representation mode

History as a science was developed from ancient storytelling. The individuals who first shared their stories among others aimed mainly to perpetuate their family and social group experiences. Since then, until the first half of the XX century, narrative has been the major and almost unquestionable form of historical representation. The historian Peter Burke (1991) mentions that in the age of the Enlightenment, authors like Voltaire and the Scottish social theorist John Millar were already challenging historical narrative. Millar wrote of the "surface of events which engages the attention of the vulgar historian" (Millar as quoted by Burke, 1991). However, it was around the 1920s, when various authors raised several issues, which would question the scientific value of historical narrative. One of the main reasons was the influence of Marx's ideology and the social science methodology among historians, which determined a criticism of their scientific and social role. At the center of that criticism was the historical narrative focus on the individuals. The current belief determined a diversion towards the analysis of societies and their structure. Moreover, those historians defended that "scientific history could be achieved which would in time produce generalized laws to explain historical change". If until then the *what* and *how* questions were the main concerns of historical narratives, the shift should be towards the *why* historical questions. (Stone, 2001)

Those new experiments towards a scientific history were not restricted to the content of historical representation. The shifts in historians' methodology raised an important debate on historical representation, namely traditional narrative. The unparalleled interdisciplinary collaboration fomented an analytic representation very different from the descriptive narratives used by historians until then. Furthermore, historians were becoming used to quantitative data in their research. Their representation no longer fitted in the storytelling method. Therefore, the representation alternatives came from those related disciplines and oriented the critique of that group, the structural historians, towards traditional narrative.

Narrative and structural historians differ in many issues while representing the same historical moment. The formers tend to base their historical explanation on individual character and intention as opposed to the latter's focus on the existing society's structure such as economy, politics, demography and so on.

Narrative champions construct their version on the assumption that individual historical agents are more significant than structural aspects to explain an historical event. Therefore, a descriptive narrative is more suitable for their historical representation. Their description is usually set up in a chronological order where events and personal decisions are linked together. Those historians were criticized for personifying collective entities such as Government and Church and oversimplifying historical events, elaborating a representation which could not be scientifically verified. Besides that and because of that, their rivals argued that from the same set of primary documents, historians could elaborate opposing and still valid versions.

Although structural historians do not exclude narratives in their historical representation, they avoid their descriptive beginning-middle-end structure. They assert that there should be a distinction between popular and academic history. According to them, academic historians should avoid telling stories and concentrate on the analysis of problems and structures (Burke, 1991). Some of the criticisms towards structural historians concern their rigid, reductionist and determinist attitudes. Diminishing the importance of historical characters, reduces their individuality and suggests that any person in that situation would take the same decision. The analysis abstraction also scales down the sense of flow of time in their representation.

The debate on modern narrative

Peter Burke wrote that the debate should not be “concerned with the question, whether or not to write narrative, but with the problem of what kind of narrative to write” (Burke, 1991). Burke presented several literary experiments, which challenged the notion of narrator or chronological sequence and responded to many historical narrative shortcomings.

According to him, the film historian Siegfried Kracauer “seems to have been the first to declare that modern fiction, more especially the ‘decomposition of temporal continuity’ in Joyce, Proust and Virginia Woolf, offers a challenge and an opportunity to historical narrators”. Hayden White got more recognition than Kracauer when he suggested that historians should abandon nineteenth-century’s literary realism and pay attention to the “literary insights of its own age (including a sense of discontinuity between events in the outside world and their representation in narrative form)” (White, 1966; Burke, 1991)

Burke identified three major problems of historical narratives in which literary experiments could offer alternative solutions. The first one is the representation of conflicts such as civil wars, which has very distinct versions. He demonstrated surprise that historians don’t apply novelist techniques such as telling the story from different points of view to overcome those problems. History is written, most of the times, in the winners’ version. Some literary experiments offer powerful devices to present to the readers both sides of the conflict and allow them opportunity for a more thorough interpretation. He exemplifies with the literary works by Aldous Huxley, William Faulkner and Lawrence Durrell. While he was finishing his essay, as he noted, Richard Price published the book “Alabi’s World” on Surinam’s eighteenth-century history. His study presents four different voices: the black slaves, the Dutch administrators, the Moravian missionaries and the author himself. In this acclaimed work, Price exhibited the differences between opposing versions by the antagonistic agents and also in time through his own voice and the historical agents (Burke, 1991)

The second problem refers to narrative competence in representing the truth. According to Burke more and more historians are realizing that they present just a “particular view of what actually happened” (Burke, 1991). A major problem is that, typically, history books present that particular view as the representation of past reality. Authors don’t communicate to the readers the awareness that their work is just one version of the facts. Traditional narrative is not very adequate for this task. Price’s book, again, presents a successful effort to overcome this problem with his voice opposed to the three other selected agents. Another alternative, presented by Burke, is fiction’s first-person narrator.

The third issue raised by Burke addresses the dispute between narrative and structural historians. According to him, none of the two groups was able to offer an historical representation alternative without bringing about other shortcomings. Thus, he proposes a synthesis between their most valuable features. The most adopted solutions by historians who are exploring in this direction are the micronarratives. They are stories about ordinary people and their settings used as a “means of illuminating structures” (Burke, 1991). Burke presents several examples. Among them, he cites Natalie Davis’s version of a sixteenth-century’s farmer, on his way back home in the south of France, after many years away, found his place occupied by another man who claimed to be the farmer himself. The story is used to present the values of society in that place and time such as the status of French rural women and current relations between husband and wife or parents and children. Burke accepts that micronarratives, as powerful alternatives to historians, present some difficulties in linking microhistory to macrohistory or local details and general trends.

Although most devices recognized by Burke in cinema come from literary experiments, they are clearly exhibited in some prominent films. Besides Kracauer’s contribution mentioned above,

Natalie Davis's "The Return of Martin Guerre" was launched almost at the same time as the homonymous film in which she was historical consultant (Vigne, 1982; Davis, 1983). Another remarkable film is Akira Kurosawa's "Rashomon" (Illustration 1) (Kurosawa, 1950). In his film, Kurosawa constructed a simple story of a samurai found dead and his wife raped, within a very creative structure. The film has four different versions – like some historians' experiments described above – presented in flashbacks: the bandit, the main suspect, assumed that he killed the samurai after a sword dispute but affirmed he had consensual sex with his wife; the raped woman confirmed the rape and suggested she was the murderer; the dead man's version, told through a medium, ratified the rape and declared a suicide; and the only witness presented elements of the other three versions without any conclusion.



Illustration 1: Akira Kurosawa's movie "Rashomon".

Kurosawa did not intend to offer a definite version but rather conclude the impossibility of knowing what really happened. Not even those who were participants in the event could elaborate similar versions. Once, when the film producers were not understanding the script, Kurosawa explained that "human beings are unable to be honest with themselves about themselves. They cannot talk about themselves without embellishing. This script portrays such human beings – the kind who cannot survive with lies to make them feel they are better people than they really are. It even shows this sinful need for flattering falsehood going beyond the grave – even the character who dies cannot give up when he speaks to the living through a medium. Egoism is a sin the human being carries with him from the birth; it is the most difficult to redeem. This film is like a strange picture scroll that is unrolled and displayed by the ego". (Kurosawa, 2002)

Rio-H

Rio-H was conceived as a web-based alternative for the presentation of a place's history. Rio-H embodies two main characteristics which differentiate it from usual historical documents:

- 1- the user doesn't follow it sequentially or if there is any sequence it is rather a spatial sequence since the documents are organized according to places in the city;
- 2- the users can explore a diverse group of documents concerning one subject – many of them can present contradictory versions.

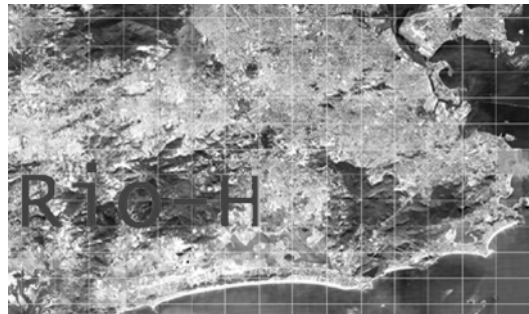


Illustration 2: Rio-H's initial page.

Rio-H rests on a database of historical documents related to specific places within the city of Rio de Janeiro, in Brazil (Illustration 2). These documents are searched from 3D model's images of different periods in the city's history. The database entries are text, image or even sound and movie files. They are digital versions of historical documents taken from a great variety of sources. Each database entry can be linked to up to five different places in the city model, five different historical periods and five keywords for searching the information. Every search starts from places represented in the city models. The database entries are classified in different categories such as photographs, newspaper articles, paintings, fiction books and official documents. Therefore, the users can search documents which present different versions or aspects of a place's history. They should be able to elaborate their own historical narrative from the spaces within a city.

The system's prototype version can be accessed at the URL: <http://www.kos.med.br/thesis>. Most text documents are not translated to English, being presented in their original Portuguese version. However, images can be accessed and few text documents are in English, to allow the analysis in both languages. For every search, the system returns every entry in the system, in the two languages. In order to facilitate the search, the entries which are in English, have their titles displayed in a black font. Those in Portuguese, are displayed in a greenish font and the gray text fonts are assigned to images without captions.

The 3D historical models

The 3D models of the city of Rio de Janeiro were elaborated in the Laboratory of Urban Analysis and Digital Representation (LAURD-PROURB) at the Federal University of Rio de Janeiro (Illustration 3). They have been used in several projects related to the city. Those models render historical periods in the city, represented in cuts selected from available antique maps or aerial

photographs. The models were constructed from the existing city 3D model with the support of the historical graphic information. The current city model is represented by the existing situation of the city in the year 2000. Thus, each historical model was elaborated backwards based on previous maps and in the remaining constructions and streets, removing the changes which occurred over the years until 2000. In order to facilitate their construction, every model was structured in three main parts: the natural landscape, with the topography and the shoreline; the street network; and the main buildings.

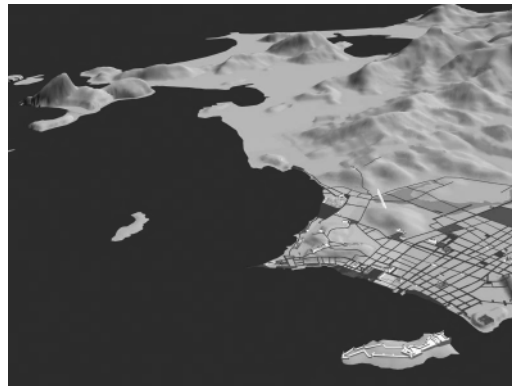


Illustration 3: Rio de Janeiro's historical 3D model

Those historical models of the city were not constructed to be realistic representations of the city. Actually it is important to emphasize their abstractionism. Each model should be accessed as a reduction to a physical fragment of the city in the past. Therefore, its role as a spatial representation is mainly to locate the "historical image" – or "dialectic images", as Benjamin states (Benjamin, 1999) – elaborated by the readers in the space of the city they already know. The simplicity of the model, based on a digital Cartesian system, is critical to bring about the great complexity of city history.

The organization of historical urban 3D models poses additional important issues. It's much easier to represent an existing situation than past moments of the city, which are never completely documented. Therefore, modeling an "incomplete" and more abstract version of the city can overcome lack of information problems and also facilitates the users to construct their own images of that period. That could be done with the support of other historical documents associated with the users' knowledge of that existing space in the city. 3D models have an important role to locate within the city, past events and associate present and past spaces. It is more important to place those events in the city space than trying to realistically reproduce an environment from the past.

The historical database of Rio de Janeiro

The database for Rio de Janeiro's historical documents was elaborated in order to organize the historical data related to Rio and its connection with the spaces within the city. The database of historical information linked to the city space is composed of a great diversity of file types. It is constituted by primary documents such as letters, photographs, official maps, official documents

and also other sources like journal articles, historians' texts and even fictional texts. The entries should be linked to one or more historical 3D models and to areas within those models. Thus, for each entry the database offers 5 possibilities to relate to one of the eight preliminary 3D historical models (1600, 1650, 1713, 1750, 1808, 1850, 1910 and 1928); 5 possibilities of areas within the model, which could be buildings, squares, streets or small urban spaces; and 5 subject keywords, for conducting the historical search engine (Illustration 4).

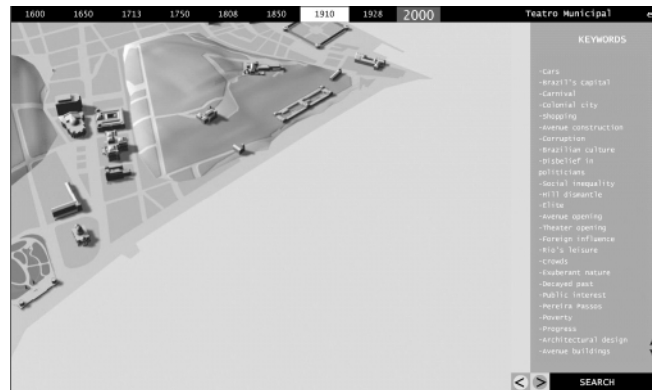


Illustration 4: Keyword's list associated to the "Teatro Municipal" in 1910's model.

The fields to select the historical models associated to the entries define a chronological classification. However, each entry can be linked to 5 different models. The chronological classification is always considered critical for an historical documentation. When a historian elaborates a narrative, time unity is usually the main link through different events. Rio-H's database does not overlook that classification but may change its prioritization. Spatial classification, which is important but not crucial for the events continuity, becomes as important as time.

A critical phase of the data compiling process is the keywords' selection for each entry. The documents related to a building are grouped by those keywords, which define the way the data is searched and retrieved by the users. Therefore, the selection of the keywords could conduct a search towards different approaches to organize the city's historical data. Political tendencies or social matters defined by those responsible to fill the data forms could change the process the documents would be retrieved by the users. While structuring Rio-H, that issue was not considered a problematic one. The researchers responsible for filling the data, however, should be aware of it when they plan the strategies for accomplishing it. The database should not be seen as a neutral tool that automatically displays historical data to any one that would access it. The individuals directing the planning and developing process should take the responsibility to clearly define their main objectives and how the information would be available through the places and keywords.

The historical documents

One of Rio-H's main objectives is to accumulate a great amount of historical information related to different places in the city. The information that is usually dispersed in different historical publications would be concentrated in one tool and related to several places of the city. The users should be able to confront different versions of one event and elaborate an image of the place they are searching through the Web in different moments in the past. Although the system can be accessed by anyone interested in the history of the city, it focuses on those who have some knowledge of the areas they are searching. It is very important that the experience they previously had in those places should be associated with the retrieved documents.

The documents available through Rio-H should reflect a great diversity of file types and sources and should present different versions for the same event. Walter Benjamin (1999) and several historians (Burke, 1991), for example, attempted to raise the history of ordinary people who suffered through their difficult lives and were not registered in the official documents. Therefore, some fictional stories from recognized authors, contemporary to the studied period, who wrote about living in the city, are also included in the database, among the historical documents. They are frequently some of the most important registers of the city's population culture, particularly the poor and powerless ones. However, it's important to acknowledge the source of those entries so that the users would identify that some of them may not be telling a story about a real person but they are probably a clear account of the way of life in that particular moment.

Another important source of documentation are the image files from paintings, engravings, photographs or even maps, which offer rich material to understand the life-style of the city dwellers. Usually books have a limited quantity of images due to the cost of printing and the size of the publication. Since the database will carry all the effort to manipulate the information and the users would retrieve just the selected documents, the images can be an important part of Rio-H's files (Illustration 5).

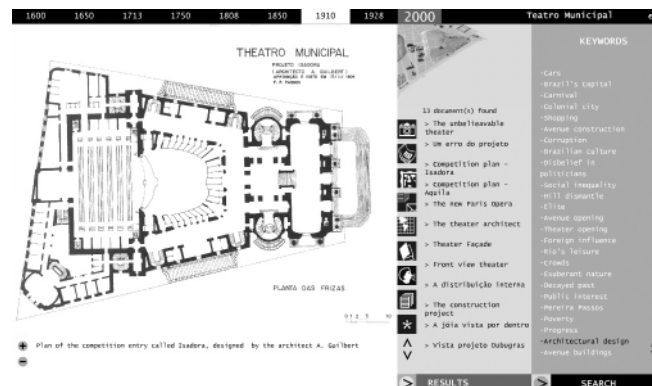


Illustration 5: Visualizing an image file in Rio-H

Additionally, personal accounts will be included in Rio-H and the users can add their report to the database to become later accessible through the system. This resource provides a channel of interaction between the users and the system and some accounts, which could never appear through other means, would register and present noteworthy versions of events that happened in some places in the city. Many elderly citizens of the city have valuable contributions to the

understanding of those places. However, a personal account, which does not convey a true story, may be exhibited. Since they are assigned as personal accounts, the users would know the type of origin of those reports.

Historians usually publish a small portion of the documents they search. They select the most important ones that corroborate the argument and narrative they construct. They usually have a limitation on the documents they can describe or present. Therefore, the users have to rely on the choices those historians have taken and would never know the neglected documents. Rio-H aims to present the history of a city and its places with the maximum variety of records and evidences. This diversity is the system's advantage over other historical documents, even video documentaries.

The web-based tool: Rio-H

Rio-H is a web-based system structured from a Macromedia Flash movie file connected to a Microsoft Access database using ASP (Active Server Pages) pages to query the database and relay information back and forth. The Rio-H's Microsoft Access database is hidden to the users who navigate through the 3D renderings of the historical models. The first choices to access the information on the system are done through the images. First choosing the date of the historical model and, once the model is loaded, one building or street should be chosen, which would relate to an ASP page to connect to the database. Therefore, the areas of the city, selected in the 3D models, relate to the first query to the database.

Once the area is selected, the database returns every keyword associated with that area in that particular historical model. (Place + Time) The users can choose one keyword or, if they want a more focused result, two keywords. The result is a list of every entry in the database that have in their fields that historical 3D model (Time), that area (Place), and one or two keywords (Subject) depending on the user's choice. The following result is another list of files from different sources. The files are grouped in nine different categories of source types associated with their respective buttons. If the user chooses to press one of the buttons, the system would list only the source type's selected files. Thus, the users follow this order in the process of searching the files: Time, Place, Subject and Source Type. The last one is not mandatory and is a way to refine their searches.

Besides the images from the historical models, Rio-H offers the possibility to switch the historical model image to the rendering of the current model, representing the city in the year 2000. That is an important feature of the system to allow the users to recognize the places in the past while they relate them to the present. Therefore, the users are always aware of the city they know and they have experienced and use that remembrance to relate to the files they read and produce an image of the past city.

One of the aims of the experiment is to use spatial information to bond historical fragments and also to strength historical continuity to the presentness of each user. Space becomes more important and less abstract than time. Therefore, historical narrative can be constructed in different formats facilitating a clear understanding of the city's past and, furthermore, of the users' present and future.

An historical narrative alternative

Peter Burke did not consider electronic documents when he argued about modern narratives and literary experiments in his essay "History of events and the revival of narrative" (Burke, 1991). Web-based documents and hypermedia offer a great opportunity to present and distribute historical research but historians have seldom explored those techniques. Until now, very few engaged in more ambitious experimentations. Books are always regarded as the primary vehicle for historical researches and images have played a secondary role even for investigations on urban or architectural history. Rio-H aims to present an alternative for this tendency. It illustrates that historians could evaluate electronic narratives as tools to overcome some of the traditional narratives difficulties.

As mentioned before, Burke noted that historians accept that their representation of history only presents a point of view and does not reproduce "what really happened" (Burke, 1991). He suggested that historians should find solutions to make readers aware of this issue, which is not clear in most publications.

The issue of different points of view in the representation of the same event is addressed by Rio-H. When different documents of similar subjects are confronted in Rio-H, the reader is aware that they come from different sources and have different authors. Many times they have conflicting versions. Those different versions may be unbalanced since the 'elite' version is better documented than others. However, this device creates an opportunity to place together information that is spread across different locations and from different authors who have different perspectives of an event. It also confers to the readers the opportunity to combine those historical pieces in their own manner.

Besides the issue of different perspectives for an historical event, several others related to the historian's narrative are raised by Rio-H. It is important to mention some of them in this investigation: the existence of much historical evidence that is not considered by the historian; the impossibility of neutrality in a historian's representation; the relation between past history and present; the use of images in their publications; or the role of an urban historian's research for the lives of the inhabitants of a city.

It is easier to incorporate "many different voices and events to reflect the diversity of past human experiences" (Cronon, 1992) on a hyperdocument than on a traditional historical narrative. The authors of the latter often hide conflicting versions of the same event in their search for a coherent text. In addition to that, the development of an historical hyperdocument with several different sources gives more control to the readers to elaborate their own narrative.

Considering a database of simultaneous events and narratives does not solve the problem of incompleteness or the truth of the historical representation. However, the very fact of introducing several options for an historical document reading already implies the existence of many others. Thus, the readers act of choosing some of the available options makes clear that historical representation, and its reading, is a constant election of alternatives. Besides that, the confrontation of opposed versions of the same event facilitates the reader to be closer to the truth, or better, to be sure that there is no truth or there are several different truths.

Historians always struggle between choosing and omitting documents in order to base their work. This choice and several others that emerge during their research and particularly their representation, confirm the active participation of historians. Rio-H can be seen as a collection of historical documents available through an electronic database. Thus, the authors of this system would have a somewhat neutral position. However, they also have taken several choices when they decided which documents to include and, particularly, when they had to classify them. Choosing keywords, for example, defines the readers' route to access the sources and

direct their navigation through the system. Therefore, the construction of the “readers’ narrative” will depend on the decision taken by Rio-H’s authors.

The view of the present through the past

A great number of historians nowadays agree that historical events should be viewed not only in relation to the present but also related to our expectations for the future. Besides that, historians always seek to relate, through their narrative, past events to current culture, as a method to “familiarize the unfamiliar”. Hayden White identifies historiography’s data as “immediately strange, not to say exotic, simply by virtue of their distance from us in time and their origin in a way of life different from our own” (White, 1978). Thus, narratives are usually used to relate cultural aspects of the past to our culture in order to reduce the strangeness of those past events.

Rio-H does not present history through a traditional narrative form. It actually presents countless narratives, which are created by each reader’s navigation. However, it does create links between past events and the present in order to familiarize those events. This link is primarily spatial. Readers are always aware, through their navigation, of relationships between past spaces and current ones. They know, in various degrees those spaces in the current configuration. Their experience is very powerful in the generation of links with the past and facilitates their creation of an image of that past.

Rio-H aims to facilitate the creation of a sense of place by sharing knowledge of different spaces within the city in the past. Therefore, it also aims to increase both the clarity and complexity of city spaces. Most studies of urban history have similar objectives. However, many historical publications try to hide the complexity of a past moment in order to make it clearer for the readers. Oversimplification of historical events creates a false idea of how society behaved and how spaces were constructed. Rio-H attempts to display the complexity of past events in a comprehensible manner and their importance to erect the city.

A critical issue to be addressed by historians who study cities is the connection between the historical information and the actual space. If that connection is not achieved, the information becomes abstract and depends on the readers’ effort to relate it to the city they know. Several techniques are applied for this task: most often images like photographs, drawings, maps and paintings. Usually they are complementary to texts, which play the primary role. Since the great majority of historical studies are published in printed format, there are always limitations in the reproduction of images such as their size or quantity.

Historical publications rarely utilize 3D city models in their works. Their use is critical in Rio-H and the choice to include renderings from those models as a point of departure to search information has several reasons and implications. As already mentioned, the renderings generated by the models are simple and do not intend to be photorealistic. They may resemble perspective maps developed for tourists with only city landmarks or even antique maps. The renderings from the 3D models of the past should not attempt to convey the complexity of reality in that moment because they could never reproduce it. When the 3D renderings support the location of the historical information in the city, they contextualize it and help to clarify a puzzling set of relationships from past society. Therefore, the space organizes the historical information, taking for granted its complexity but trying to display it in an organized form.

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