

## Forensic architecture: A new dimension in Forensics

### Arhitectura criminalistică: o nouă dimensiune a criminalisticii

Ancuța Elena Frant<sup>1</sup>

**Abstract:** In this paper, we analyse a methodology of investigation which we think that it has all the features needed in order to be considered a new forensic domain, namely forensic architecture. We explore the origins of this new field and its current applications. This strategy of investigation was created and promoted by the team of the Forensic Architecture research agency, so we analyse the way that this team applies forensic architecture in finding evidence in real cases. We take into consideration what the creators of forensic architecture present as the defining characteristics of this methodology, in regard to the purpose of forensic architecture and to the techniques and the tactics used in order to reach that purpose. The declared aim of the research agency for using forensic architecture is, mainly, to address human rights violations, in the context of contemporary conflicts. Basically, forensic architecture uses advanced digital technics, which help to extract the maximum amount of information from all possible data, for example from street cameras. Forensic Architecture research agency also organises exhibitions, where evidence is exposed, in order to raise the public awareness towards human rights` violations. We sustain the idea that forensic architecture can expand its scope and can be separated from the context where it was originally developed and, thus, become an important forensic domain.

**Keywords:** Forensics, forensic architecture, human rights, contemporary conflicts, digital techniques

**Rezumat:** În această lucrare analizăm o metodologie de investigare despre care credem că are toate caracteristicile necesare pentru a fi considerată un nou domeniu criminalistic, și anume arhitectura criminalistică. Articolul explorează originile acestui nou domeniu și aplicațiile sale actuale. Această strategie de investigație a fost creată și promovată de echipa agenției de cercetare Forensic Architecture, motiv pentru care analizăm modul în care această echipă aplică arhitectura criminalistică în găsirea probelor în cazuri reale. În demersul nostru, cercetăm ceea ce creatorii arhitecturii criminalistice prezintă drept caracteristici definitorii ale acestei metodologii, adică scopul arhitecturii criminalistice și tehnicile și tacticile folosite pentru a atinge acest scop. Scopul declarat al agenției de cercetare Forensic

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<sup>1</sup> Lecturer, PhD, Faculty of Law, „Alexandru Ioan Cuza” University of Iași, e-mail: ancuta.frant@uaic.ro .

Architecture pentru utilizarea arhitecturii criminalistice este, în principal, investigarea posibilelor încălcări ale drepturilor omului, în contextul conflictelor contemporane. Practic, arhitectura criminalistică folosește tehnici digitale avansate, care ajută la extragerea unei cantități maxime de informații din toate datele posibile, de exemplu din imaginile înregistrate de camerele video stradale. Agenția de cercetare Forensic Architecture organizează și expoziții, unde sunt expuse dovezile găsite, pentru a sensibiliza publicul față de încălcarea drepturilor omului. Susținem ideea că arhitectura criminalistică își poate extinde domeniul de aplicare și poate fi separată de contextul în care a fost dezvoltată inițial și, astfel, să devină un domeniu criminalistic important.

**Cuvinte-cheie:** Criminalistică, arhitectură criminalistică, drepturile omului, conflict contemporan, tehnici digitale

### 1. Introducing the concept of forensic architecture

Throughout the years, Forensic Sciences have known a constant development. Until recently, it seemed that forensic directions of investigation have been, somehow, clearly formed, and that evolution will occur in the already established directions. Of course, this impression was wrong. It is in the nature of Forensic Sciences to always have the potential to develop in a totally new manner. After all, it is not the first time that Forensics brings into the light a radical change<sup>2</sup>.

This paper analyses what it seems to be a new direction in forensic investigations, namely forensic architecture<sup>3</sup>. In the following lines, we will

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<sup>2</sup> J. L. Peterson, A. S. Leggett, *The evolution of forensic science: Progress amid the pitfalls*, in *Stetson Law Review*, Vol. 36, Issue 3, 2007, pp. 621-660; M. Benecke, *A brief history of forensic entomology*, in *Forensic Science International*, Vol. 120, Issues 1-2, 2001, pp. 2-14, [Online] at [https://doi.org/10.1016/S0379-0738\(01\)00409-1](https://doi.org/10.1016/S0379-0738(01)00409-1), retrieved 20.06.2022; P. J. Candilis, R. Martinez, *The Evolution of Forensic Psychiatry Ethics*, in *Psychiatric Clinics*, Vol. 44, Issue 4, 2021, pp. 571-578, [Online] at <https://doi.org/10.1016/j.psc.2021.08.001>, retrieved 20.06.2022; W. C. Thompson, J. Vuille, F. Taroni, A. Biedermann, *After uniqueness: The evolution of forensic science opinions*, in *Judicature*, Vol. 102, Issue 1, 2018, pp. 19-27; J. L. Valentine, L. K. Sekula, V. Lynch, *Evolution of Forensic Nursing Theory—Introduction of the Constructed Theory of Forensic Nursing Care: A Middle-Range Theory*, in *Journal of Forensic Nursing*, Vol. 16, Issue 4, 2020, pp. 188-198, [Online] at doi: 10.1097/JFN.0000000000000287, retrieved on 02.06.2022; J. M. Wiersema, *Evolution of Forensic Anthropological Methods of Identification*, in *Academic Forensic Pathology*, Vol. 6, Issue 3, 2016, pp. 361-369, [Online] at <https://doi.org/10.23907/2016.038>, retrieved 20.06.2022.

<sup>3</sup> *Forensic architecture* must not be confused with *architectural forensics*. Architectural forensics refers to the investigation of a built environment, in order to obtain information needed in a legal case or in another context, for example to identify the cause of damage of a building. For further details, see: S. A. A. Kubba, *Architectural Forensics*, published by McGraw-Hill Education – Europe, 2008; R. I.

analyse the core concept of this new forensic domain, its applications, as well as the critics which have been addressed to forensic architecture. Our goal is to understand the basic principles which lie at the foundation of this new forensic field and to see its potential strengths, as well as its potential weaknesses. Overall, we want to find out if this new approach in forensic investigations is reliable and if it is worth to continue research, in order to enhance its content and, furthermore, its applicability.

## 2. The etymology of the term „forensic architecture”

In our quest to understand the content of this new forensic domain, the first step we take is to understand the etymology of the term. In one dictionary, *forensic* is defined as „connected with the scientific tests used by the police when trying to solve a crime”<sup>4</sup>. In the same dictionary, *architecture* is defined as „the art and the study of designing buildings”<sup>5</sup>. It results that forensic architecture means roughly the use of scientific tests, in the specific environment formed by buildings, in order to help judicial bodies to find the truth related to law infringement.

Revealing the etymologic meaning of the term leads to somehow surprising findings. At a first view, it may seem improper to connect Forensics and Architecture, in such a way that their connection to create a new, coherent, domain of study and practice. Forensics refer to the use of certain techniques and tactics, developed specifically to analyse the traces left by perpetrators. Of course, investigations (for example, crime scene investigations) often take place inside buildings or near buildings, which determine the investigators to take into account specific architectural features<sup>6</sup>. But the idea to start from architectural features, and to build upon them an investigative strategy is a new forensic approach.

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Leete, *What is Architectural Forensics?*, in ArchDaily, published June 18, 2022, [Online] at <https://www.archdaily.com/983759/what-is-architectural-forensics#>, retrieved 20.06.2022.

<sup>4</sup> *Oxford Advanced Learner's Dictionary*, Oxford University Press, 2020, [Online] at <https://www.oxfordlearnersdictionaries.com/definition/english/>, retrieved 20.06.2022.

<sup>5</sup> *Ibidem*.

<sup>6</sup> For example, if a crime has been committed in a flat which has several rooms, the investigators must search in all rooms and use specific techniques and tactics (for example, specific photographic techniques), in order to perform a detailed search in all areas of the flat. If a crime has been committed in an open-space interior, for example in a sports hall, other kind of techniques and tactics will be used.

### 3. The origins of forensic architecture

The concept of forensic architecture has been created by a team of researchers led by Eyal Weizman<sup>7</sup>. The year 2010 marks a milestone for this forensic domain, as Professor Weizman and his team have obtained a grant provided by the European Research Council (ERC), in order to expand their research on this field. According to the creators of this new forensic domain, „*Forensic architecture* is the name of an emergent academic field (...). It refers to the production and presentation of architectural evidence—relating to buildings, urban environments—within legal and political processes”<sup>8</sup>.

Apart from designating a forensic technique, the syntagm Forensic Architecture (with capital letters as initials) is also the name of a research agency, based at Goldsmiths, University of London<sup>9</sup>. The creators of forensic architecture actually carry on their activity through the work they perform at Forensic Architecture research agency. It results from the above-mentioned information that the term forensic architecture is used to appoint both a forensic domain and a research agency. This means that, at least now, forensic architecture as an investigative methodology and Forensic Architecture research agency have a very tight connection, being almost inseparable. Later in this paper we will address the possibility to separate the investigative methodology from the research agency.

As regards the methods used by forensic architecture, these consist mainly in an analysis of the architectural characteristics<sup>10</sup>, with the help of digital technologies. An important role is played by the analysis of the recordings made by street cameras, smartphones or other similar devices, which, due to their virtual omnipresence, can offer many information, which they record intentionally or unintentionally. Also, another characteristic is the fact that those who apply forensic architecture actually try to extract the maximum of information, even if this means to go beyond their scientific background. For example, if, in a certain case, they consider that an opinion of an expert in the effect of fluid dynamics is needed, they ask an opinion of

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<sup>7</sup> Eyal Weizman is Professor of Spatial and Visual Cultures at Goldsmiths, University of London. [Online] at <https://www.gold.ac.uk/visual-cultures/w-eizman/>, retrieved 20.06.2022.

<sup>8</sup> [Online] at <https://forensic-architecture.org/about/agency> , retrieved 20.06.2022.

<sup>9</sup> *Ibidem*.

<sup>10</sup> Later in this paper we will try to analyse whether, in approaching forensic architecture, we can assign a broad meaning of the term *architecture*.

such an expert<sup>11</sup>. This means that an important feature of forensic architecture is, also, a constant search for all possible methods that could reveal the truth.

Furthermore, we highlight the fact that, according to its creators, forensic architecture is not only shaped by the techniques and tactics it uses. It is also defined by the *purpose* of using its specific methods. The use of forensic architecture is focused on „contemporary conflicts and human rights violations”<sup>12</sup>, which are taking place „in urban areas, amongst homes and civilian neighbourhoods”<sup>13</sup>. The main concern for the promoters of forensic architecture consists in the fact that „the nature of urban war is such that parties in conflict wilfully blur the line between civilians and combatants”<sup>14</sup>. This means that forensic architecture is primarily focused on the cases where there have been violations of human rights and, more, the background of such violations consists in some kind of contemporary conflict.

But what is „contemporary conflict” and what relation does it have with forensic architecture? In the following lines we will try to find at least a partial answer.

#### 4. Forensic architecture and contemporary conflicts

Changes in social, political and economic aspects of society, which were abundant beginning with the middle of the XX<sup>th</sup> century, have brought in a shift in the way conflicts and war take place. The difference is not only in the technical or tactical means they use, but also in their scope. People realised quickly that changes have been made in regard to conflicts. The new kind of conflict has been named *contemporary conflict*.

In their effort to understand the characteristics of this new type of conflicts, scholars have advanced different definitions. Some argue that contemporary conflicts are, essentially, generated by clash between different ethnic groups, by need to gain control over resources, or by desire to obtain or to maintain personal wealth<sup>15</sup>. We can see that, in this view, the political factor is not considered a decisive agent. Others consider that, although the motives presented above do play a very important role in today`s conflicts,

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<sup>11</sup> For example, in the case of the tear gas in Plaza de la Dignidad, [Online] at <https://forensic-architecture.org/investigation/tear-gas-in-plaza-de-la-dignidad> , retrieved 20.06.2022.

<sup>12</sup> [Online] at <https://forensic-architecture.org/about/agency> , retrieved 20.06.2022.

<sup>13</sup> *Ibidem*.

<sup>14</sup> *Ibidem*.

<sup>15</sup> I. Duyvesteyn, *Contemporary war: Ethnic conflict, resource conflict or something else?*, in *Civil Wars*, Vol. 3, Issue 1, 2007, pp. 92-116, [Online] at <https://doi.org/10.1080/13698240008402433> , retrieved 25.06.2022.

they cannot fully explain contemporary conflicts; they believe that, in order to have a better understanding of the present-day conflicts, we must also take into account the political interests, because war is, still, an instrument that ensures the achievement of political interests<sup>16</sup>. The view which considers that political interests are, in the present-day society, an important source for conflicts illustrate that the opinions of Clausewitz, which have shaped for a long period of time the way war was perceived, are still valued<sup>17</sup>. The idea that war is still an instrument for the political interests is sustained by studies which have analysed the conflicts going on in countries where the formal state structures have been destroyed (for example, in Liberia and Somalia). These studies point out that, even in these conflicts, where apparently the political factor was the least likely to have an impact, still had a political stake<sup>18</sup>.

As we can see, at the first glance, the creators of forensic architecture understand contemporary conflicts rather in a narrow sense. This conclusion results from the official presentation of forensic architecture, on the website of Forensic Architecture agency<sup>19</sup>. As we have pointed out above, the creators of forensic architecture highlight that their activity is concerned with „contemporary conflicts and human rights violations”, which are committed with an ever-increasing rate in urban areas, contributing to the creation of a so-called urban war. They suggest that they are more concerned with the individual sufferings which occur in the so-called contemporary conflicts. This is why they focus on what seems to be the immediate cause for the damages caused to the individual, namely the ethnic/ideological conflicts or the injuries caused to the individual who wants to claim his or her natural rights. But this does not mean that they ignore political reasons, which are, however, hard or even impossible to ignore. Actually, there is the probability that, in many cases, there is a political factor, although it may be hidden under more visible and immediate reasons. And the creators of forensic architecture are fully aware of this, because, in another phrase from their

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<sup>16</sup> *Ibidem*.

<sup>17</sup> G. Dimitriu, *Clausewitz and the politics of war: A contemporary theory*, in *Journal of Strategic Studies*, Vol. 43, Issue 5, 2020, pp. 645-685, [Online] at <https://doi.org/10.1080/01402390.2018.1529567> , retrieved 05.06.2022; R. Callum, *War as a Continuation of Policy by Other Means: Clausewitzian Theory in the Persian Gulf War*, in *Defence Analysis*, Vol. 17, Issue 1, 2001, pp. 59-72, [Online] at <https://doi.org/10.1080/07430170120041802> , retrieved 25.06.2022.

<sup>18</sup> I. Duyvesteyn, *op. cit.*

<sup>19</sup> As we have pointed out before, on the official website of Forensic Architecture research agency, the activity of this agency is described as the investigation of human rights violations, committed by different actors, like states, police forces, militaries and corporations. [Online] at <https://forensic-architecture.org/about/agency> , retrieved 20.06.2022.

online presentation, they explicitly say that their investigations aim at different kinds of human rights` violations, „including violence committed by states, police forces, militaries, and corporations”<sup>20</sup>. This means that, in fact, the view of forensic architecture`s creators on contemporary war is not narrow at all. On the contrary, they take into account the political factor, because at least violence committed by states can hardly be imagined without a political outcome. Our conclusion is actually supported by the official presentation of forensic architecture, where it is stated that forensic architecture is being used „within legal and political processes”<sup>21</sup>. This means that, when they refer to „contemporary conflicts”, the promoters of forensic architecture take into account the broad meaning of this term, which includes the political dimension.

Indeed, a certain limitation for forensic architecture exists in regard to the methods it uses, but this is not a weak spot, it just provides the content of forensic architecture, or, in other words, just shows how forensic architecture works. It actually creates the strength of this new forensic domain, which, as we have seen, relies on *specific methods*, in order to obtain significant results. And this specificity is not a weakness, because it provides greater accuracy.

## **5. The defining characteristics of forensic architecture**

As we have pointed out above, the information provided by the promoters of forensic architecture reveals that forensic architecture uses specific methods, aimed at investigating certain categories of crimes. In order to have a clear image about this new investigation method, we will present the main characteristics of forensic architecture, the way they result from the official information disseminated by the creators of this new forensic domain. From this perspective, there are two categories of characteristics that define forensic architecture: the types of crime which are investigated through forensic architecture and the types of methods which are used. In our quest, we will try to see if we can expand the meaning of forensic architecture beyond the boundaries which apparently have been set by its creators.

### ***5.1. The crimes investigated by forensic architecture***

As highlighted by its creators, forensic architecture, applied by Forensic Architecture research agency, investigates specific crimes, which are generally defined as „human rights violations including violence committed by states, police forces, militaries, and corporations”<sup>22</sup>, in an effort

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<sup>20</sup> [Online] at <https://forensic-architecture.org/about/agency> , retrieved 20.06.2022.

<sup>21</sup> *Ibidem.*

<sup>22</sup> *Ibidem.*

to protect „communities and individuals affected by conflict, police brutality, border regimes and environmental violence”<sup>23</sup>. In order to achieve their goals, the promoters of forensic architecture often form a partnership with different structures from the civil society, „from grassroots activists, to legal teams, to international NGOs and media organisations”<sup>24</sup>.

Apart from the general description of the crimes investigated with forensic architecture methods, the creators of this new investigative method who work at the Forensic Architecture research agency have strict criteria in order to determine if a cause qualifies to be investigated by this agency. These criteria are: a). The issue must involve human rights or environmental aspects, which are not properly investigated by the states where the issue appeared; b). There must be a „spatial or architectural dimension”<sup>25</sup>, so that the specific methods of forensic architecture can be applied. There is also an additional criterion, which states that the people from Forensic Architecture „...also aim to take on cases that offer (...) an opportunity to develop new research techniques”<sup>26</sup>. In our opinion, as little detail is given in reference to this third criterion, we understand that this criterion can exist in dependence either with the both two previous criteria or with the second criterion. As the name of the investigative technique in question is *forensic architecture*, it results that the investigation performed under this label must always have something to do with architectural and spatial environment. This means that it is possible that a case does not meet the first criterion, being a case which does not involve human rights or environmental issues, but implies some architectural or otherwise spatial elements; in this case, experts in forensic architecture may accept to perform an investigation, if the case offers to the specialists in forensic architecture the opportunity to discover and to perfect new investigative techniques<sup>27</sup>.

The evidence gathered through forensic architecture has already had practical applications, as it was used in different legal cases, parliamentary inquiries and in citizen’s tribunals and community assemblies. Also, the

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<sup>23</sup> *Ibidem*.

<sup>24</sup> *Ibidem*.

<sup>25</sup> *Ibidem*.

<sup>26</sup> *Ibidem*.

<sup>27</sup> This is one interpretation which can be given to the information existing on the official website of Forensic Architecture research agency. The third criterion, which refers to the commitment to engage in the development of investigative techniques, seems to be independent from the other two criteria, but it may be interpreted that it must be connected at least with architectural elements. Of course, it can be argued that the third criterion is almost always connected with the first one, as in almost all crimes there is a violation of human rights, in one form or another; but, according to the first criterion, forensic architecture addresses the cases of such violations *which are not effectively adressed by states*.

findings obtained through the use of forensic architecture were presented in exhibitions, in important cultural institutions. At the same time, forensic architecture has been presented in media<sup>28</sup>.

### **5.2. The techniques and the tactics used by forensic architecture**

The techniques and the tactics<sup>29</sup> involved in the investigations performed with forensic architecture methods share some common traits with those used in „classical” forensic investigations, but have some defining characteristics which highlight the specificity of forensic architecture. According to the official website of Forensic Architecture research agency, forensic architecture implies the use of „cutting-edge techniques in spatial and architectural analysis, open source investigation, digital modelling, and immersive technologies, as well as documentary research, situated interviews, and academic collaboration (...)”<sup>30</sup>. Also, „3D animations, virtual reality environments and cartographic platforms”<sup>31</sup> are being used.

Basically, the investigators analyse a certain environment and try to find if there is the possibility that photographs or audio-video recordings exist, namely if there is the possibility that some people or automated devices have done such recordings, and if so, to find the photographs and recordings. Also, a great importance is given to the witnesses, and the experts examine if such witnesses exist. At the same time, specialists in forensic architecture search for all possible information that could reveal the truth (for example, the air humidity, the speed of the wind or other meteorological circumstances). All the data gathered is further used in order to reconstruct the events and to analyse them, with the aim of finding what really happened<sup>32</sup>.

An innovative technique used in forensic architecture is the use of digital models as instruments for taking interviews with the persons who survived the acts of violence of which they were victims<sup>33</sup>. Of course, this technique must be used in such a manner that it does not increase the psychological traumatic experience of the victims.

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<sup>28</sup> [Online] at <https://forensic-architecture.org/about/agency> , retrieved 20.06.2022.

<sup>29</sup> Although, usually, the reference is made to forensic architecture *techniques*, we believe that we must not ignore the *tactical* component of forensic architecture. In the general framework of the theoretical structure of Forensic Sciences, there is a clear distinction between forensic techniques and forensic tactics. Of course, they often intertwine, until the point that it is difficult to separate them.

<sup>30</sup> [Online] at <https://forensic-architecture.org/about/agency> , retrieved 20.06.2022.

<sup>31</sup> *Ibidem*.

<sup>32</sup> *Ibidem*.

<sup>33</sup> *Ibidem*.

In order to properly apply the advanced technique used by forensic architecture, the team of specialists in this field include „architects, software developers, filmmakers, investigative journalists, artists, scientists and lawyers”<sup>34</sup>. This abundance of highly specialised experts, with very different scientific background, really makes forensic architecture stand out from other forensic methods, and that is why this is one of the most important characteristics of this investigative procedure.

An interesting problem would be to establish if we can expand the methods which are explicitly presented as being used by forensic architecture. In other words, we want to find out if we can include within the means of forensic architecture methods which are not directly related to architectural features. Our quest starts from three premises. First, we have found out that the definition of the term architecture also includes an extended meaning. Second, in the activities performed by Forensic Architecture research agency there are some that are not directly related to the classical meaning of the term architecture. And third, the team of the Forensic Architecture research agency specifically refer to their openness to take on cases that offer „an opportunity to develop new research techniques”<sup>35</sup>. In the following lines we will detail our argumentation.

As regards the broad meaning of the term architecture, we have found out that, apart from the well-established meaning, which is related to buildings and other spatial perspectives, *architecture* also means „the way something is built or made up”<sup>36</sup>. This means that we can see forensic architecture as a method which tries to establish the way that certain action took place and certain results occurred, even if they are not directly related to buildings or some spatial features.

With reference to the second argument, we bring into discussion the fact that Forensic Architecture research agency has performed some activities which do not have a direct connection with what we commonly understand through the term „architecture”. For example, in the project called „Model Zoo”, the team worked on creating 3D Models of munitions and weapons, in order to offer the digital classifiers the opportunity to have a proper training, so they will be able to correctly identify such objects in future investigations<sup>37</sup>. In this project, the team did not analyse buildings or spatial features, but has extensively examined different categories of

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<sup>34</sup> *Ibidem*.

<sup>35</sup> *Ibidem*.

<sup>36</sup> Dicționarul explicativ al limbii române (ediția a II-a revăzută și adăugită), Academia Română, Institutul de Lingvistică, Editura Univers Enciclopedic Gold, 2009.

<sup>37</sup> [Online] at <https://forensic-architecture.org/investigation/model-zoo> , retrieved 25.06.2022.

munitions and weapons, using digital technologies. Still, the purpose of this project perfectly fits in the general frame of Forensic Architecture research agency, which basically aims to reveal the truth in certain cases where human rights have been violated. This is because an automated recognition of the type of munitions and weapons that have been used in a certain case can be of a great importance in solving a case.

The third argument, which we have already exposed, strengthens the second one, by revealing that Forensic Architecture research agency has fixed as a principle to carry out activities which have the potential to develop the state-of-the-art. It follows that, in the quest for new techniques, there must not be a direct connection to what we commonly understand when we think about architecture. It is important that the activity helps to understand the „architecture” (in the broad meaning) of a certain thing or situation, so that, in the end, when all the pieces of the puzzle are assembled, people can learn the truth.

### ***5.3. Is forensic architecture a forensic methodology?***

The information presented above shows that forensic architecture has all the features needed to designate it as a forensic methodology. This conclusion comes from the fact that forensic architecture is circumscribed to certain type of crimes and/or to certain circumstances and uses specific technical and tactical methods, which is exactly the definition of a forensic methodology. We believe that, no matter what we think about its present-day form, forensic architecture reveals itself as an important new direction in Forensics (despite the criticism). In our view, forensic architecture has even a greater potential. In the following lines we will explain our opinion.

We can notice that the technical and the tactical approach of forensic architecture, as described by its creators, can also be applied in other cases than those which can be included in the category of „contemporary conflict”. For example, in the investigation of a crime which cannot be included in this category, it would also be useful to use forensic architecture’s methods. Of course, one can argue that at least *some* of the methods used by forensic architecture are already being used in other types of cases, and this is true. For example, searching for audio-video files, which may contain the recording of a crime, in the smartphones of the witnesses is a method which is applied whenever is possible, in a virtually countless number of cases. This approach is often used by investigators who have a general specialisation or who are specialists in a specific forensic domain. But the investigators usually do not have the same vision as a forensic architecture specialist has. This means that we can reasonably think that, in many cases, it would be useful to have a specialist in forensic architecture who can analyse the crime scene from a specific perspective. At a crime scene investigation, this

specialist could stay away from the „usual” forensic activities, and focus only on those directions emphasised by forensic architecture. He or she could only search for what the environment (understood in a broad meaning) has to offer, in order to extract the maximum amount of information related to the investigated case.

The reasoning presented above entitles us to sustain that it would be very useful to apply forensic architecture in any case it is needed, not only in the categories initially considered by its creators. This would not affect the initial frame where forensic architecture was developed, as forensic architecture could further be used to investigate crimes committed in the so-called „contemporary conflicts”. But, at the same time, a *general forensic architecture* could be developed, in order to apply the innovations of forensic architecture to the crimes which are not included in the initial categories.

## 6. How forensic architecture actually works: real cases

In order to have a better understanding of what forensic architecture is, we will rely on the presentation of several cases, where forensic architecture has been used.

One of the cases where forensic architecture was used refers to an incident which took place in 2019, in Plaza de la Dignidad, in Santiago de Chile. The incident which was investigated consists in the use of great quantities of chemical agents (like tear gas) by the police, against peaceful protesters. The experts in forensic architecture used several techniques, including 3D Modelling, Geolocation, Fluid Dynamics, Synchronisation<sup>38</sup> and Open source intelligence<sup>39</sup>. An important source for information was a camera which was installed on a building. A method of automated video analysis was used, in order to determine the extent of the tear gas clouds, which helped to locate each gas canister that was used. Fluid dynamics helped to understand the dynamics of the toxic cloud. Also, meteorologic

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<sup>38</sup> *Synchronisation* refers to the technique that enables researchers to establish the exact relation between two or more pieces of evidence which consist in audio-visual recordings. This is done by establishing when one action begins, relative to another. An important element in applying this technique is finding visual or audio clues (namely visual or audio elements which stand out, so it is easier to relate one element to another). For further details, see the explanation [Online] at <https://forensic-architecture.org/methodology/synchronisation> , retrieved 26.06.2022.

<sup>39</sup> *Open source intelligence* (abbreviated OSINT) refers to information gathered from sources which are publicly available. For further details, see A. S. Hulnick, *The Dilemma of Open Sources intelligence: Is OSINT Really Intelligence?*, in L. K. Johnson (ed.), *The Oxford Handbook of National Security Intelligence*, Oxford University Press, 2010, pp. 229-241, [Online] at <https://doi.org/10.1093/oxfordhb/9780195375886.003.0014> , retrieved 26.06.2022.

information (temperature, humidity, wind) was used in order to establish the level of toxic substances in air, at the ground level and in the river which flows near the scene of the investigated actions. The evidence suggested that police forces used 596 tear gas canisters and that the level of toxicity far exceeded the official safe-limit. All these have pointed out that the activities of the police have put in serious risk the health of the protesters, as well as causing a dangerous rise of toxicity in the environment<sup>40</sup>.

In another case, the experts in forensic architecture have analysed the practice of abandoning refugees who try to come across the Aegean Sea, which is against international protocols. Since February 2020, Greece has been accused with using this method, named „drift-back”, but has denied the guilt. Forensic Architecture agency has begun its research in partnership with other institutions concerned with human rights` protection, for example Amnesty International Crisis Evidence Lab. The methods used are diverse, and include 3D Modelling, Geolocation, Ground truth<sup>41</sup>, Data mining<sup>42</sup>, Fieldwork, Fluid Dynamics, Open source intelligence, Pattern Analysis<sup>43</sup>, Remote Sensing<sup>44</sup>, Software development. Forensic Architecture research

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<sup>40</sup> [Online] at <https://forensic-architecture.org/investigation/tear-gas-in-plaza-de-la-dignidad> , retrieved 27.06.2022.

<sup>41</sup> *Ground truth* refers to the technique of connecting the results of a computational or digital process (for example, Satellite image analysis) to a precisely-determined location on the globe. This technique works by comparing measurable information on the ground (for example, GPS coordinates), to the contents of the digital process. For further details, see D. Kondermann, *Ground truth design principles: an overview*, VIGTA '13: Proceedings of the International Workshop on Video and Image Ground Truth in Computer Vision Applications, July 2013, Article No. 5, pp. 1–4, [Online] at <https://doi.org/10.1145/2501105.2501114> , retrieved 27.06.2022.

<sup>42</sup> *Data mining* refers to the technique of creating a database by extracting information from text or video documents of multiple formats. For further details, see R. J. Roiger, *Data Mining: A Tutorial-Based Primer*, 2<sup>nd</sup> Edition, Chapman and Hall/CRC Imprint, New York, 2017, [Online] at <https://doi.org/10.1201/9781315382586> , retrieved 27.06.2022.

<sup>43</sup> *Pattern analysis* refers to the identification of the wider category where an incident belongs, based on the general assumption that, usually, individual incidents share traits with other similar incidents. The identification of recurrent traits may indicate that a certain action is practiced systematically. For further details, see W. R. Howard, *Pattern Recognition and Machine Learning*, in *Kybernetes*, Vol. 36, Issue 2, 2007, p. 275, [Online] at <https://doi.org/10.1108/03684920710743466> , retrieved 27.06.2022.

<sup>44</sup> *Remote Sensing* refers to remote data, for example data gathered by satellites or other aerial sources of information (like planes or drones). This technique is necessary especially in those cases where the investigators do not have access to the crime scene. For further details, see G. Camps-Valls, *Machine learning in remote sensing data processing*, 2009 IEEE International Workshop on Machine Learning

agency has created an online platform designed specifically to present in a highly organised manner the relevant information obtained so far<sup>45</sup>. The investigation is still in progress. Until this moment, Forensic Architecture research agency points out that there is significant evidence which proves that Greek authorities do practise the „drift-back” method<sup>46</sup>.

In the case of the killing of Zineb Redouane, Forensic Architecture research agency had to investigate the circumstances referring to the death of a woman, aged 80, who died after she was struck in the face by a tear gas grenade, while she was standing at the window of her apartment, placed at the fourth floor of a building in Marseille, France. The incident took place while the police tried to keep under control the protest of the so-called „les gilets jaunes” (the yellow vests), in 2018. The methodology used by the investigators included the use of 3D Modelling, Image Complex<sup>47</sup> and Synchronisation. While the official investigation showed that no person was guilty, the Forensic Architecture investigation led to finding pieces of evidence which point out that there has been a violation of the rules of using tear gas grenades by the police<sup>48</sup>.

The three cases presented above clearly illustrate the way forensic architecture is used in carrying on the investigations. We have seen that there are many techniques which, basically, try to extract as much information as possible from the gathered data, even when information is really scarce. The use of digital analyses proves to be essential.

Beyond the techniques and the tactics which are used to perform the investigation, in reaching its aim Forensic Architecture research agency also uses certain unconventional methods. We do not refer to the actual investigation, but to what Forensic Architecture research agency does *after* it gathers information related to a case. After finding evidence, the agency tries

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for Signal Processing, 2009, pp. 1-6, [Online] at doi: 10.1109/MLSP.2009.5306233, retrieved on 27.06.2022.

<sup>45</sup> The platform can be accessed [Online] at <https://aegean.forensic-architecture.org/>, retrieved 28.06.2022.

<sup>46</sup> [Online] at <https://forensic-architecture.org/investigation/drift-backs-in-the-aegean-sea>, retrieved 28.06.2022.

<sup>47</sup> *Image Complex* refers to a technique that uses individual pieces of evidence within digital architectural models. This enables investigators to establish an accurate time-space coordination between the individual pieces of evidence. The method is particularly useful when the incident is only partial recorded with video or audio devices. For further details, see the explanation [Online] at <https://forensic-architecture.org/methodology/image-data-complex>, retrieved 28.06.2022.

<sup>48</sup> [Online] at <https://forensic-architecture.org/investigation/the-killing-of-zineb-redouane>, retrieved 28.06.2022.

to bring the data into people's attention, in an effort to raise awareness towards the seriousness of the facts. For this purpose, Forensic Architecture research agency organises exhibitions where it exposes the evidence and uses media, in order to disseminate its findings<sup>49</sup>.

This approach is, indeed, a new way to see Forensics and the purpose of the evidence it gathers. Usually, Forensics is being used in official investigations, in order to help solving a legal case. Although it sometimes cooperates with official institutions, Forensic Architecture research agency seems to have a larger purpose than to solve a certain case. This purpose is to let all people know what really happened. We believe that this initiative is, in itself, praiseworthy, because, if society becomes aware of the bad deeds that are being committed, we can hope for a change for the better.

### **7. Criticism to Forensic Architecture research agency. The effects on the forensic architecture methodology**

Despite the spectacular nature of forensic architecture as an investigative method and, we would say, *independently* from the intrinsic characteristics of this new methodology, criticism has been addressed to the Forensic Architecture research agency, the institution which, as we have already shown, is the main user of forensic architecture, as it is defined on the official website of the research agency.

The criticism refers to the fact that some results obtained by the team of the Forensic Architecture research agency seem to be biased, as they are in accordance with the views which have been constantly shown by the team, as the critics claim. The main accusation is that Forensic Architecture research agency, when it had analysed incidents involving Israel, had a steady anti-Israel attitude, which resulted in gathering evidence that always proved the guilt of Israel<sup>50</sup>.

In this paper, we do not want to go further into this controversy. We are primarily interested in forensic architecture as a method of investigation. However, we wonder if the criticism on Forensic Architecture research agency has somehow cast a shadow on the reliability of forensic architecture as an investigative methodology.

Analysing the content of the critics which have been addressed to Forensic Architecture research agency, we have seen that it has been expressed the opinion that Forensic Architecture research agency is considered „a pseudo-research project that consistently generates analyses

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<sup>49</sup> [Online] at <https://forensic-architecture.org/programme/exhibitions> , retrieved 28.06.2022.

<sup>50</sup> [Online] at [https://www.ngo-monitor.org/reports/amnesty\\_s\\_war\\_on\\_israel\\_accusations\\_of\\_unlawful\\_killings\\_without\\_evidence/](https://www.ngo-monitor.org/reports/amnesty_s_war_on_israel_accusations_of_unlawful_killings_without_evidence/) , retrieved 29.06.2022.

that are inaccurate, misleading, and blatantly prejudiced”<sup>51</sup>. We notice that the criticism is aimed at the Forensic Architecture research agency, not at forensic architecture as an investigative method. Of course, the criticism falls also upon the methodology used by Forensic Architecture research agency, namely forensic architecture. However, while the target of the critics is the result, we could not find so far a scientific explanation justifying why it is considered that the investigations led by Forensic Architecture research agency are flawed. The only explanation that we have found out is related to the members of the team working at the Forensic Architecture research agency (mainly Eyal Weizman), whose background seems to reveal a biased position.

As regards forensic architecture as an investigative methodology, we believe that the information provided so far by Forensic Architecture research agency, as well as the already established use of digital technics in contemporary Forensics point out that forensic architecture has the potential needed in order to be considered as an independent investigative methodology.

## 8. Conclusions

Undoubtedly, the development of forensic architecture shows that the present-day reality needs complex methods of investigation. The name of this new forensic domain captures an essential aspect of the contemporary society, namely the fact that our actions are almost always related to a certain type of human-built environment. Anyway, we have shown that we can assign a broad meaning to the word *architecture*, which means that we can expand the applicability of forensic architecture to virtually any case where its key-features are needed. In spite of all criticism, it cannot be denied that forensic architecture can lead to significant results, which can be logically-sustained. This means that forensic architecture really has the potential to offer an important help in search for evidence. The fact that this forensic domain is just in its infancy makes us believe that it will develop into an important field in Forensic Sciences and that it will improve over time. Also, the great potential of this investigative domain makes us hope that it will be established as a distinct forensic methodology, independent from the entity that has created it, namely the Forensic Architecture research agency. Of course, this would not diminish the merits of its creators.

Apart from what we have said above, we believe that forensic architecture is also important because it shows that Forensics is a continuously changing field, which does not get stuck in the limitations of the

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<sup>51</sup> [Online] at <https://www.ngo-monitor.org/ngos/forensic-architecture/> , retrieved 29.06.2022.

present, but goes on, in search for the truth. This is an important feature, which makes us hope that, in the future, Forensic Sciences will find the needed resources in order to adapt and to offer the best solutions to fight against crimes, in our ever-changing society.

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