10 YEARS OF 'ARCHAEOGAMING': AN ITALIAN PERSPECTIVE

1. Introduction

The advent of digital and computational technologies from the mid-20th century onward has notably impacted archaeology and cultural heritage management. As interactive technologies have become more affordable and easy to use, archaeologists worldwide have been exploring the profound implications and effects of computing, moving beyond viewing them as mere technical aids. In the last few decades, there has been an increasing emphasis on integrating computing comprehensively into archaeological methodologies (Daly, Evans 2005). The advent of computers has transformed the realm of archaeology by allowing experts to seamlessly incorporate theoretical principles into their research methodologies (Costopoulos 2016; Morgan 2022; Watrall, Goldstein 2022). This has had a profound effect on every facet of archaeological investigations, ranging from initial planning to the dissemination of findings (Huggett 2015) to the extent that the statement «we are *all* digital archaeologists» (Morgan, Eve 2012, 523) which was intended to be radical, is nowadays an acknowledgement of a normal state that has existed for at least 20 years and has characterised a significant segment of the archaeological community for at least 40 years (Whallon 1972).

Nowadays, one of the areas of investigation within digital archaeology involves the study of the relationship between archaeology and digital games. However, the integration of video games with archaeology has been a challenging combination, especially in Italy, due to academics viewing commercial products as providing unreliable information, the misconception that video games are childish entertainment, and the lack of understanding of the interactive industry (Modena 2019; Giordano 2020). The association of archaeology with video games was commonly simplified to Indiana Jones and Lara Croft, both for scholars and the general public. It might have been through the decades of exploitation of the brand of archaeology by popular media (Holtorf 2007) that manifested the association, but it might have been simply the case of the archaeologists' ignorance to work in a meaningful way with this quite fresh and still controversy causing medium (Watral 2002; Hanussek 2019a).

However, the international academic community, including archaeology professionals, has recently taken a keen interest in the link between digital games and archaeology with regard to research, education, and communication (Mol *et al.* 2017; Reinhard 2018; Huggett 2019; Morgan 2019; Hageneuer 2020; Ariese *et al.* 2021). The perception that digital games were frivolous has been debunked due to its significant impact on people's daily lives. The increase in the

popularity of digital games can be attributed to their potential to provide users with immersive, competitive and interactive experiences. While it is unquestionable that the concept of 'play and game' is a universal one, embedded in every known culture (Huizinga 1949), its role nowadays has reached an ungraspable influence on us: digital games have become, therefore, an omnipresent and omnipotent entity lingering on our smartphones, tablets, consoles and computers, ready to give us pleasure, fun and challenges on demand. The implication of digital games in our society is understated by the growing amount of literature – popular and scientific – on the topic (Chapman 2016), the billion-dollar fold revenues of the game industry (Muriel, Crawford 2018, 31; Newzoo 2024) and other aspects like 'gamesque' behavioural patterns (called gamification), which are transported from the virtual realm into the private and professional life to stimulate motivation and cognition (Ruffino 2018, 28).

A particular approach to tackling video games with archaeological methodology was introduced by Andrew Reinhard, who coined the term 'archaeogaming' in 2013 on his namesake blog (http://www.archaeogaming.com). Following the blog, Reinhard wrote the book *Archaeogaming: an Introduction to Archaeology in and of Video Games*, which was published in 2018 and quickly became the standard manual for archaeogaming research. Scholars in this field critically analyse historical contexts and representations of material culture in digital games from an archaeological perspective. Additionally, since then, archaeologists have been increasingly involved in developing three-dimensional models and interactive applications (Champion 2017; Morgan 2017).

This paper aims to provide a detailed review of the first ten years of archaeogaming as a recognised field of study from an Italian perspective, starting from 2013, when the term was first coined. Although archaeogaming theory does not seem to be consciously applied, a growing interest in the relationship between archaeology and video games has emerged in Italy in the last few years. The research will delve into the peculiar emergence of this phenomenon in Italy and provide an in-depth analysis of the qualities that characterise the field. It will explore the various milestones in the origin story of Italian archaeogaming and the significant developments that have occurred during this period. Furthermore, the paper will try to envision future developments in the field and provide an understanding of the role archaeogaming is likely to play in the future. The goal is to provide a broad overview of archaeogaming as a field of study and highlight its potential in shaping the future of Italian archaeology.

2. Archaeogaming: archaeology in and of digital games

Would digital games and archaeology seem like two completely different fields? As illustrated by Watrall (2002), for many years, there

has been a certain amusing stigma attached to the whole idea of exploring archaeologically oriented interactive entertainment, even if some pioneering experiments had already been conducted. This is, for example, the case of *The Sumerian Game*, an early text-based strategy video game developed as part of a joint research project between the Board of Cooperative Educational Services of Westchester County, New York and IBM between 1964 and 1966 for investigating the use of computer-based simulations in schools (WING 1966). Several decades later, in 1990, archaeology's love affair with interactive digital media was first seriously sparked by *Adventures in Fugawiland: A Computer Simulation in Archaeology*, developed within the University of Wisconsin and designed to introduce students to the basics of archaeological research by allowing them to simulate fieldwork experiences (PRICE, GEBAUER 1990). Beyond these sporadic cases, where archaeology was incorporated into a gaming experience, a singular point of origin for the engagement of archaeologists with video games cannot be determined, neither in time nor in place. Although archaeologists have used computer applications for half a century, and the first historical video game dates to the era of the earliest computer games, archaeogaming is significantly younger as a field of study (MORAIS CRUZ 2022). The first publications on the topic appeared in the 2000s, dealing with a variety of issues, from exploratory (GARDNER 2007) to experimental (MORGAN 2009) heritage visualisation-focused (CHAMPION 2011) approaches. In the early 2010s, however, when the term archaeogaming was coined, the field started taking shape.

In Reinhard's 2018 book, archaeogaming is defined as «an archaeological framework which, broadly speaking, includes the study of archaeology *in* and *of* video games, as well as the use of video games for archaeological purposes», distinguishing five main themes within the definition of archaeogaming (REINHARD 2018, 2-4; RASALLE 2021, 4-5). In this perspective, archaeology and digital games are perfectly coherent: if the first aims to study material culture and its physical, functional, and symbolic aspects through specific research methodologies, on the other hand, digital games are human products that are recorded in physical or digital media and created from the fusion of programming codes, texts, audio, and art that can be studied through an archaeological approach (COPPLESTONE 2017; SMITH NICHOLLS, COOK 2022). This makes them a part of contemporary material culture loaded with meanings resulting from subjective interpretations of reality by groups of people (HOLTORF 2017; RASALLE 2021).

The origins of archaeogaming were characterised by a great freedom of exploration. In part, this was due to the fact that the new area of study had no set boundaries, nor any clear research agenda (MOL *et al.* 2021). Moreover, substantial independent investigation was carried out outside

traditional academic environments, often during researchers' spare time or alongside grant projects. This freedom allowed for extensive exploration of all aspects and angles of archaeogaming, attracting individuals from various disciplines, notably many early-career scientists (Politopoulos *et al.* 2019). Yet, it is precisely because archaeogaming is still so 'young', at least academically speaking, that it might be important to identify and discuss shortcomings and impasses that might have developed over these early years (Hanussek 2019b). As Politopoulos and Mol recently reviewed archaeogaming from a global perspective, identifying three key points of critique regarding 1) the archaeological study of games, 2) archaeological outreach and 3) transdisciplinarity (Politopoulos, Mol 2023), it seems significant to analyse the Italian experience in greater detail, following up the critical observations that emerged from their examination to identify distinctive or similar features, paths and results.

3. The Italian context

The Italian Interactive Digital Entertainment Association's most recent data (2024) shows that in 2023, the Italian video game market performed solidly, with a turnover of 2.3 billion euros. There are 13 million gamers in Italy, 31% of the population aged between 6 and 64. Out of all the platforms, mobile devices are the most popular among gamers (71%), followed by consoles (43%) and PCs (35%). When looking at the audience distribution by age group, the largest group of gamers is between 15 and 24 (25%), followed by 45 to 64-year-olds (24%). The remaining age groups are distributed as follows: 25-34 years (16%), 35-44 years (15%), 11-14 years (11%), and 6-10 years (9%). Instead, observing the percentage of video gamers by age group, the one where the video game is the most widespread is between 11 and 14 years old (65% play), followed by 15-24-year-olds (65%) and 6-10-year-olds (47%).

In the last decade, the rapid development of digital technologies and the hasty spread of digital media in all its forms have affected how different audiences experience heritage and the way heritage organisations interact with their public (Boom *et al.* 2020; Mariotti 2020). What can be noticed is that in the same period, in Italy, the domain of cultural and archaeological heritage has seen an upsurge of interest in digital game applications for engaging new audiences, disseminating knowledge and promoting sites and museums' collections (Bonacini, Giaccone 2021; Bonacini 2022; Mariotti 2022, 2023).

Upon closer examination, a noteworthy coincidence stands out: while archaeogaming gained recognition in 2013, in 2012, the First National Congress of Public Archaeology marked the institutionalization of public

archaeology as a recognized discipline in Italy (Bonacchi 2013; Nucciotti *et al.* 2019). In both cases, the recognition was given to practices that had already been established for some time, although they were often considered experimental. The close succession of these events prompts us to question whether there is a connection between them and what it might signify (Richardson 2013). Could technological advancements have led to a re-thinking of traditional archaeological practices? Or are archaeologists lever-aging the latest technological tools to enhance their research dissemination?

What can be observed is that the spread of public archaeology programs in Italy also had the potential to challenge pre-existing notions about the role of interactive entertainment in academics (Volpe, De Felice 2014; De Felice 2015; Volpe 2020, 75-76) and address the significant risk of mis-conceptions about archaeology, which are often promoted by the interactive entertainment industry (Watrall 2002; Mariotti 2020). As a result, Italy's cultural and archaeological heritage domain has recently seen an upsurge of interest in video games, although archaeogaming theory does not seem consciously applied.

4. Archaeogaming in Italy (2013-2023): overview and analysis

This section will provide an overview of the Italian archaeogaming dy-namics between 2013 and 2023, using the three aforementioned key points of critique identified by Politopoulos and Mol (2023) as guidelines.

Regarding the first point – whether archaeology can be useful for stud-ying games and vice versa – it appears that the Italian academic community has not shown any interest in this area of research. The idea of an archae-ology that deals with digital objects may seem to go against the very nature of traditional archaeology, which focuses on materiality. However, there is potential for a new wave of archaeogaming in Italy that could explore the physical video games and their associated metadata. This trend may benefit from the growing interest in Contemporary Archaeology (De Felice 2023, 2024).

In their analysis of using archaeogaming for outreach, Politopoulos and Mol (2023, 119-121) explore interactive examples such as live-stream-ing games with commentary and field experiments using Minecraft with the public. The Let's Dig Again Association's archaeologists in Italy conducted similar experiments on their Twitch channel with the 'Gaming Night' series. They also hosted experts on specific topics to explore the depiction of the past in popular video games[1]. Unfortunately, the outreach and content production,

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[1] Many episodes are available on the Let's Dig Again YouTube channel (https://www.youtube.com/c/LetsDigAgain).

as reported by the Dutch experience, faced several hurdles, which resulted in a low average streaming audience. Noteworthy, in the second case, is the use of Minecraft both in the online fee-based event organised in 2022 by a private institution, Fondazione Golinelli and the archaeologists of the Etruscan National Museum of Marzabotto to engage children between 11 and 13 years old in the process of reconstructing an Etruscan city[2] and the school competition organized by Maker Camp and Italia Longobardorum association to engage the students in the development of storytelling and environments related to Lombard civilisation[3].

However, it appears that Italian archaeologists have a stronger inclination towards developing video games as a means to engage the public and convey historical information rather than utilising commercial games. Between 2013 and 2023, many archaeologists have been involved in the creation of digital projects as freelancers able to provide reliable historical content, but also as designers or as part of cultural institutions, universities and research bodies both in partnership with developers and as patronage (Bonacini, Giaccone 2021). Moreover, some archaeogaming experiments have been developed – in collaboration with game companies – within university laboratories such as the Laboratory of Computer Science Applied to Medieval Archaeology of the University of Siena, the Laboratory of Medieval Archaeology, Computer Science and Anthropology of the University of L'Aquila, and the research centre DigiLab of the Sapienza University of Rome (Bertoldi, Mariotti 2022).

Tab. 1 and Fig. 1 present the games developed in Italy during the selected decade, retrieved from scientific literature, the Italian Videogame Program narrative archive[4], and web-based research conducted via Google search engine. A great variety of terms depicting these projects emerges from the study: "video game", "applied game", "gamified/playful experience", "game-like application", etc., often summed up in the widespread definition of "serious game". In such an interdisciplinary field of study, there is still no consistent definition of "serious games" (Wilkinson 2016); the term was first used to describe games for a primary purpose other than pure entertainment (Abt 1987; Djaouti *et al.* 2011), but significant influence has been added later by the work of Sawyer and Rejeski (2002) and nowadays serious games for digital heritage encompass a wide range of projects (Paliokas 2019).

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[2] https://www.fondazionegolinelli.it/it/events/archeo-minecraft-costruisci-una-citta-come-farebbe-un-etrusco.

[3] https://unesco.cultura.gov.it/en/news/premiazione-del-concorso-per-le-scuole-i-longobardi-in-minecraft/.

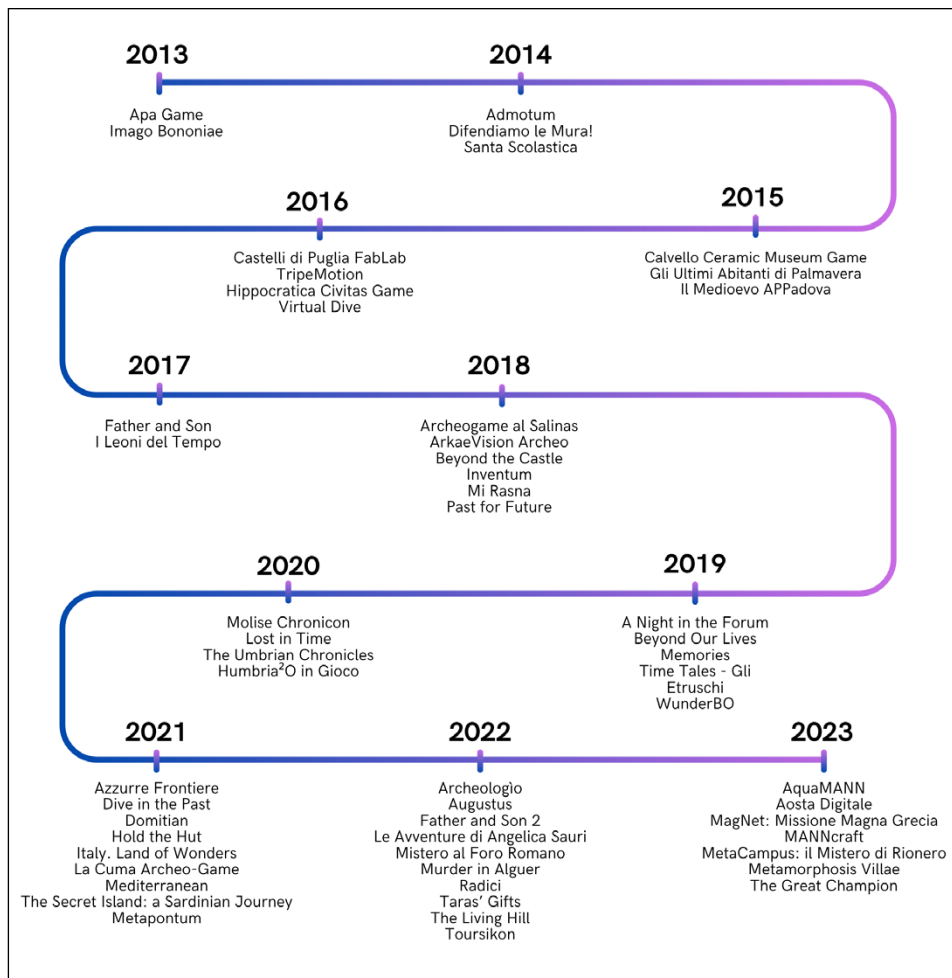[4] https://ivipro.it/it/italia-in-gioco/.

Fig. 1 – Timeline of Italian video games dedicated to Italian archaeology (2013-2023).

Despite the large variety of cases dedicated to Italian archaeological heritage, including immersive navigations in virtual museums/sites, 3D artefacts/archaeological reconstructions, and storytelling applications, the parameters at the basis of the selection proposed only include projects: 1) dedicated to Italian archaeological sites, museums, ancient civilisations and available in Italian; 2) created with entertaining/engaging/promotional/educational purposes; 3) involving a gaming experience linked to the cultural content (minigames, quizzes, quests, missions, etc., Esposito 2005).

Title	Year	References
Apa Game	2013	GUIDAZZOLI *et al.* 2014
Imago Bononiae	2013	FANINI, PAGANO 2015
Admotum	2014	FANINI *et al.* 2015
Difendiamo le Mura!	2014	PIETRONI 2020
Santa Scolastica	2014	https://www.swipe-story.com/app/santascolastica
Calvello Ceramic Museum game	2015	GABELLONE, CHIFFI 2018
Gli Ultimi abitanti di Palmavera	2015	https://ivipro.it/it/portfolio-item/gli-ultimi-abitanti-di-palmavera/
Il Medioevo APPadova	2015	https://arcmed.beniculturali.unipd.it/ARMEP_APPADOVA.html
Castelli di Puglia Fab Lab	2016	https://www.swipe-story.com/app/castelli-puglia
Trip eMotion	2016	https://www.cnrweb.tv/trip-emotion-il-serious-game-dedicato-ai-beni-culturali/
Hippocratica Civitas Game	2016	ANDREOLI *et al.* 2017
Virtual Dive	2016	BRUNO *et al.* 2017
Father and Son	2017	SOLIMA 2018
I Leoni del Tempo	2017	https://www.swipe-story.com/app/ileonideltempo
Archeogame al Salinas	2018	https://www.icar.cnr.it/progetti/archeogame-al-salinas/
ArkaeVision Archeo	2018	PAGANO *et al.* 2020
Beyond the Castle	2018	https://beyondthegate.webflow.io/eng/blogs-eng/beyond-the-castle-eng
Inventum	2018	https://www.effenove.it/works/inventum/
Mi Rasna	2018	AMOROSO 2020; BONACINI, GIACCONE 2021
Past for Future	2018	https://www.tuomuseo.it/past-for-future-videogioco-museo-marta-taranto/
A Night in the Forum	2019	FERDANI *et al.* 2020; PESCARIN *et al.* 2020
Beyond Our Lives	2019	https://www.beyondourlives.com/
Memories	2019	https://www.egameapps.com/gameapps/memories/
Time Tales – Gli Etruschi	2019	MARIOTTI, MAROTTA 2020
WunderBO	2019	https://www.wunderbo.it/
Molise Chronicon	2020	CARBONARA *et al.* 2019
Lost in Time	2020	https://apkpure.com/it/egnazia-lost-in-time/com.ai2.lostintime
The Umbrian Chronicles	2020	LENGUA *et al.* 2021
Humbria²O in Gioco – Dei ed Eroi	2020	https://www.humbria2o.it/album/
Azzurre Frontiere	2021	https://www.swipe-story.com/app/azzurre-frontiere
Dive in the Past	2021	COZZA *et al.* 2021
Domitian	2021	https://www.egameapps.com/gameapps/domitian/
Hold the Hut	2021	MUTINO *et al.* 2022
Italy Land of Wonders	2021	https://ilow.esteri.it/
La Cuma: Archeo-Game	2021	https://www.egameapps.com/gameapps/la-cuma-archeo-game/
Mediterranean	2021	https://www.egameapps.com/gameapps/mediterranean/
The Secret Island: a Sardinian Journey	2021	https://memorywefts.com/home/the-secret-island/
Metapontum	2021	https://makercamp.it/en/la-mappa-di-pitagora-e-metapontum/
Archeologìo	2022	https://www.3dresearch.it/heritage-it/prodotti/archeologio-serious-game-it/
Augustus	2022	FAZIO *et al.* 2022; https://ivipro.it/it/portfolio-item/augustus/
Father and Son 2	2022	https://mann-napoli.it/father-and-son-2/
Le avventure di Angelica Sauri	2022	https://playalghero.it/giochi/angelica-e-il-re-degli-algiroidi
Mistero al Foro Romano	2022	https://colosseo.it/en/education/games-on-line-app-the-roman-forum-mistery/
Murder in Alguer	2022	https://playalghero.it/giochi/murder-in-alguer
Radici	2022	https://www.egameapps.com/gameapps/radici-sabina-e-cicolano/
Tara's Gifts	2022	DE FELICE 2022
The Living Hill	2022	BERTOLDI, MARIOTTI 2022; MARIOTTI 2023
Toursikon	2022	https://www.effenove.it/works/toursikon/
AquaMANN	2023	https://culturgame.it/en/games/
Aosta Digitale	2023	https://www.effenove.it/works/aosta-digitale/
MagNet: Missione Magna Grecia	2023	https://www.magnetproject.eu/magnet-app/
MANNcraft	2023	https://mann-napoli.it/manncraft/
MetaCampus: il mistero di Rionero	2023	https://ivipro.it/it/portfolio-item/metacampus-il-mistero-di-rionero/
Metamorphosis Villae	2023	https://www.melazeta.com/progetti/metamorphosis-villae
The Great Champion	2023	https://ivipro.it/it/portfolio-item/the-great-champion/

Tab. 1 – Video games dedicated to Italian archaeological heritage developed in Italy between 2013 and 2023.
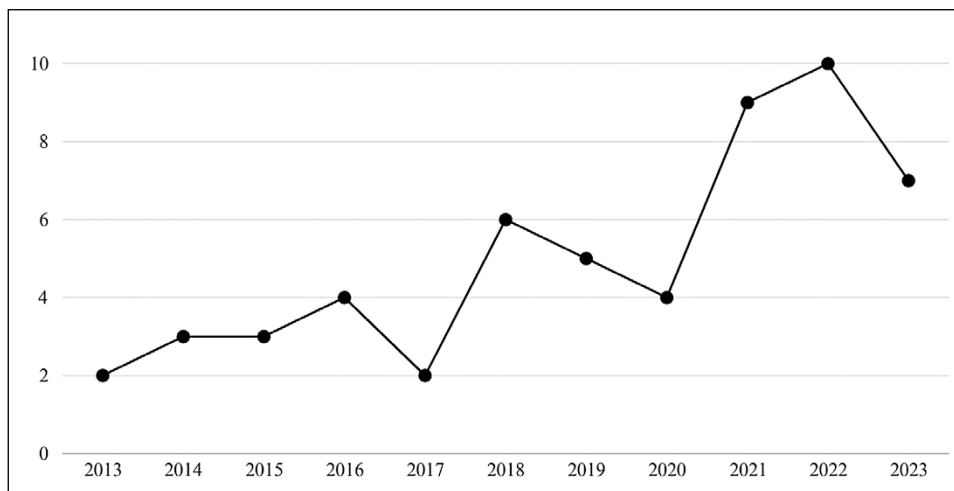
Fig. 2 – Sample development trend (2013-2023).

In order to begin discussing the topic, it is essential to acknowledge the crucial and pioneering role played by the National Research Council (CNR) of Italy in the development of video games (and other virtual, interactive solutions) to promote archaeological sites over the years (PESCARIN 2020). Among the first examples are *YRSUM 3D*, a serious game aimed at commercially exploiting remote sensing data in the field of edutainment, developed in 2011 (GABELLONE *et al.* 2017) and *Pleistostation*, a touch screen educational game for pupils created in 2012 in collaboration with the Superintendency of Rome and installed at the Casal de' Pazzi Pleistocene Museum in Rome (PALOMBINI *et al.* 2013). However, the role of universities must be addressed too: in 2011, another innovative project, *The MediaEvo Project: Otranto*, a didactic game about the history of Otranto in the Middle Ages had been developed within the University of Salento (DE PAOLIS *et al.* 2011), while the first example of the Swipe Stories format developed within the University of Foggia for the archaeological collection of the Fondazione Sicilia dates back to 2012 (DE FELICE 2013).

As illustrated in Fig. 2, the development of video games dedicated to Italian archaeology experienced significant changes between 2013 and 2023. Initially, from 2013 to 2016, such projects were almost exclusively undertaken by universities and the National Research Council (CNR), resulting in steady but limited growth. The trend change significantly in 2017, when the gaming industry entered the scene, driving a notable increase in the number of projects. The dip observed in 2019-2020 coincides with the COVID-19
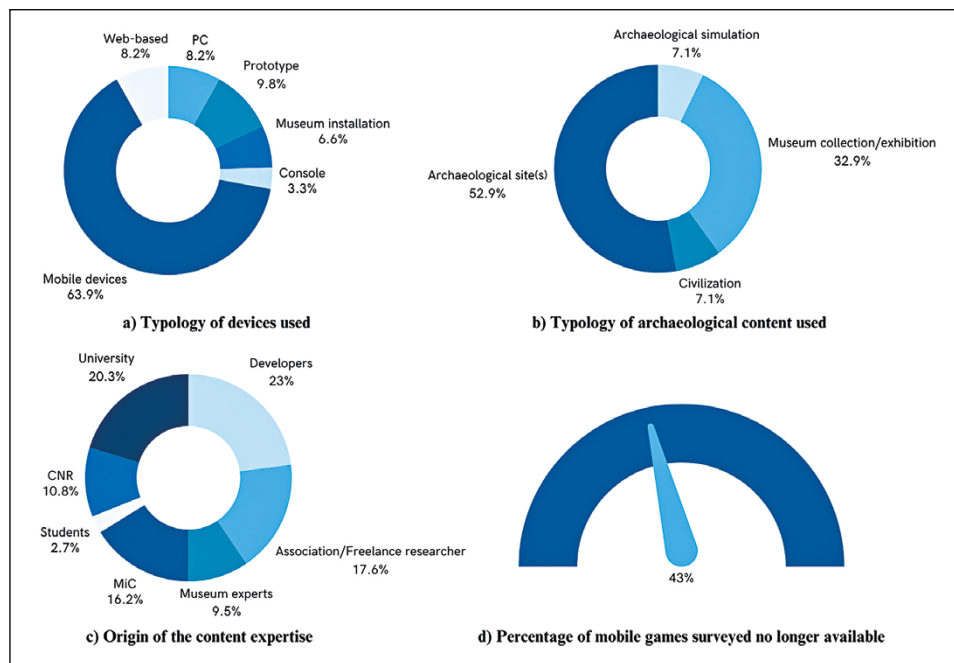
Fig. 3 – Sample analysis: devices, content, expertise and mobile games current availability.

pandemic, which likely disrupted development efforts. Following the pandemic, there is a strong recovery starting in 2021, peaking in 2022, though 2023 sees a slight decline in activity.

Although many projects encompassing a wide range of typologies, devices, technologies, objectives, and partners are involved (Fig. 3), some observations can still be made. First of all, games have been subject to player evaluations only in a few cases, and usually with prototype projects, as illustrated in the reference list. As a result, it is difficult to determine their "success" in terms of goals achieved. Even tracking the number of players can prove difficult as app stores do not divulge precise download figures, and monitoring users for game stations in museums is a notably arduous task. Additional rare instances include conducting preliminary studies on the target and engaging communities in creating the game.

One alarming finding from this analysis is that many mobile applications (43%) have become unavailable for the latest operating systems within a few years of their release. This highlights both obsolescence and sustainability issues that need to be addressed in regards to these projects (Nylund *et al.* 2020; Vergara *et al.* 2020).

Region	Video Games
Campania	11
Latium	10
Apulia	8
Basilicata	8
Sicily	7
Emilia-Romagna	6
Tuscany	6
Sardinia	6
Umbria	5
Calabria	4
Lombardy	3
Aosta Valley	2
Veneto	2
Friuli-Venezia Giulia	2
Marche	1
Abruzzo	2
Molise	2
Liguria	1
Trentino-Alto Adige	1
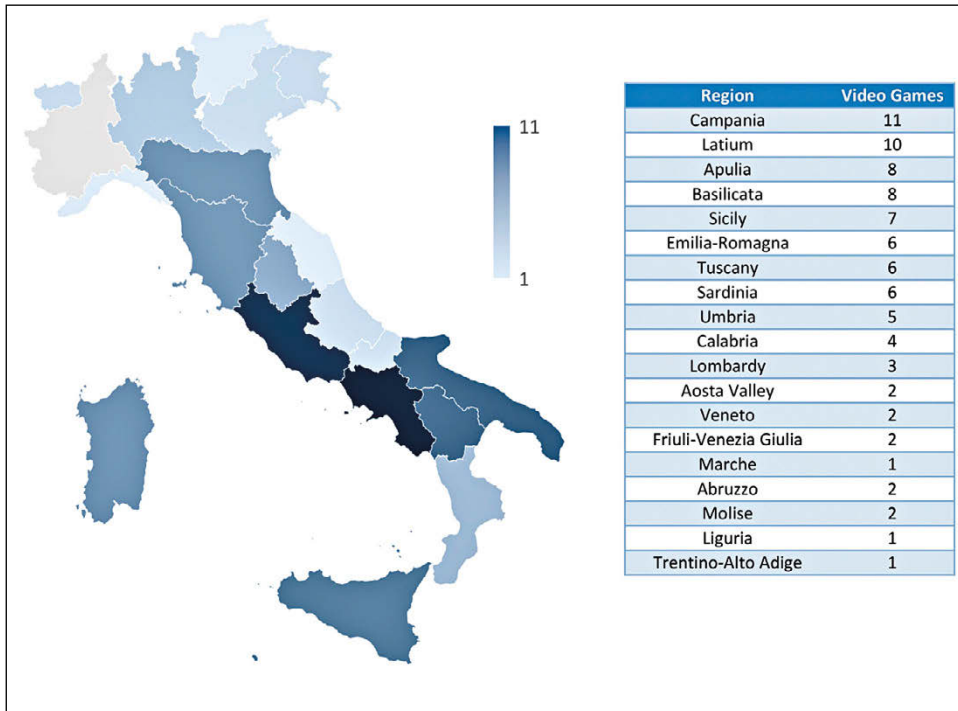
Fig. 4 – Regional distribution of the locations included in the games (in grey: *n*=0).

Remarkably, nearly two-thirds of the gaming experiences examined in this analysis are focused on archaeological sites, museums, or locations in southern Italy. That is an interesting trend that may be attributed to the efforts of local game companies and researchers. As illustrated in the map (Fig. 4), the game projects surveyed are spread across different regions, with a slight majority in Campania, Latium, Basilicata and Apulia. Notably, the Archaeological Museum of Naples is featured in four distinct games. From a thematic point of view, the sample exhibits various examples spanning from prehistory to the late Middle Ages and beyond. However, between 2018 and 2019, there was a peak in the representation of the Etruscan civilisation, which was made possible by the funding provided by Toscana Promozione Turistica.

The last archaeogaming dynamic to be analysed regards transdisciplinarity, which is intended as a holistic approach to the theme. Archaeogaming has proven to be a valuable tool in building connections between fields that archaeology has not traditionally collaborated with, such as games and

media studies, education studies, psychology, social studies and more. It is worth noting that historians have also been actively involved in reviewing video games and their depiction of history. In Italy, the group "Storia e Gioco"[5], created within the Italian Association of Public History, is a perfect example of critically studying historical video game representation from various perspectives, including those of developers. Further efforts are necessary in this regard in the archaeological sector; however, optimism arises when observing the list of video games developed in Italy over the past decade, particularly regarding potential collaborations with indie studios, smaller teams of game developers that have both the operational, artistic, and intellectual flexibility to work with scholarly input (MARIOTTI 2023). This collaboration can undoubtedly benefit how Italian citizens engage with the past through games.

5. CONCLUSION

While the term (and theory of) archaeogaming may not be widely widespread in Italy, its future is no longer a blank slate, and its potential for growth and development is promising. At least three significant key factors influencing its future trajectory may be foreseen. Firstly, the rapid technological advancements in AR and VR (including the metaverse and AI developments) will expand the pool of source materials available for gaming and research purposes. Secondly, established and emerging scholars will likely build upon earlier work by acknowledging past achievements while addressing gaps and weaknesses, especially setting a theoretical audience-focused, ethics-led, data-driven framework to create and critically analyse these kinds of projects. That will help create a strong foundation for the field and aid the growth of the discipline. Lastly, the success of archaeogaming will also depend on institutional and financing support from both the academic and gaming industries.

Archaeogaming can benefit Italian archaeology by helping people reshape their curiosity, knowledge and understanding of the past in an engaging way. As POLITOPOULOS and MOL (2023, 124) argue, archaeogaming is, first of all, «about collectively making, exploring, and playing in this wild new, digital playground».

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ABSTRACT

Archaeogaming is a term coined in 2013 by Andrew Reinhard. It emerged from a grassroots movement in digital archaeology aimed at exploring the use of gaming technolo-

gies for studying the past and archaeological representation through video games' narrative and interactive potential. This research explores the reception of archaeogaming theory in Italy over the 2013-2023, stressing the positive impact of public archaeology in addressing academic misconceptions towards gaming. The shift in perspective led to more projects mixing archaeology and video games and an organic collaboration between academic archaeology and other disciplines. Although archaeogaming is a new area of research in Italy, some trends have already emerged. These reveal both successful elements and missed opportunities. Acknowledging both aspects seems crucial to calibrate future projects on original archaeogaming theory, including co-creating, exploring, and promoting knowledge in the digital space.