

Finding Listeners for Walls that Speak

Geert J. Verhoeven^{1*}, Massimiliano Carloni², Jona Schlegel¹, Benjamin Wild³ and Stefan Wogrin⁴

¹Ludwig Boltzmann Gesellschaft - LBI ArchPro, 1190 Vienna, Austria; E-Mail: geert@projectindigo.eu; jona.schlegel@archpro.lbg.ac.at

²Austrian Centre for Digital Humanities and Cultural Heritage, Österreichische Akademie der Wissenschaften, 1010 Vienna, Austria; E-Mail: massimiliano.carloni@oeaw.ac.at

³TU Wien - Department of Geodesy and Geoinformation, 1040-Vienna, Austria; E-mail: benjamin.wild@geo.tuwien.ac.at

⁴SprayCity, Austria; E-Mail: stefan.wogrin@spraycity.at

* Corresponding author

1. Modern Graffiti—Objects to Study or a Study to Object

Colourful and quickly changing: graffiti can be considered the chameleon skin of any urban landscape (Curtis, 2005). Two millennia ago, people were already writing their thoughts on the urban surfaces of Greek Aphrodisias in present-day Turkey (Chaniotis, 2011) or Roman Pompeii in Italy (Garrucci, 1856), and this practice has lived on throughout many cultures until this very day (Lovata & Olton, 2015; McDonald, 2013). Because of this long history and the multitude of surfaces on which graffiti have appeared, defining ‘graffiti’ is complicated. A safe but overly general definition could be that graffiti are a multifaceted, ‘self-authorized’ (Blanché, 2015) form of personal mark-making that exploits the public space using a visual intervention. ‘Graffiti’ can thus be an umbrella term for many ancient and contemporary mark-making practices, including engravings, paintings, sprayings, stickers, and other personal expressions attached to public (urban) surfaces in legal or illegal ways. [Note that we use the adjective ‘ancient’ instead of the commonly found ‘historic’ since the latter excludes prehistoric paintings and inscriptions from the graffiti definition. For more info on how to define ‘graffiti’, see Schlegel *et al.* in this volume].

Many modern graffiti might evoke the feeling of violating basic principles of acceptable social behaviour while providing colour to a city and displaying artistic skill. This tension between vandalism and art explains why contemporary graffiti can be so polarising and why they intrigue.

That appeal is even reinforced by graffiti’s usually unsanctioned and volatile character. Graffiti simply represent ambivalence, friction, and contrast: between legal and illegal, tangible and intangible, subversive and humorous, textual and graphical, condemning and apathetic, pleasing and disturbing. Few present-day phenomena embody so many different values, are characterised by this multitude of expression forms and have such a long history. In that sense—and going by the definition of ICOMOS (ICOMOS International Committee on Cultural Tourism, 2022)—both ancient and modern graffiti must be considered cultural heritage.

Although others increasingly share this viewpoint (e.g., Forster *et al.*, 2012; Ronchi, 2009; The European Task Force on Culture and Development, 1997), graffiti still have a dubious relationship with(in) the cultural heritage sector. Many books on urban heritage (e.g., Colavitti, 2018; Longstreth, 2008; Obad Šćitaroci *et al.*, 2019) do not mention them, and some heritage professionals explicitly exclude graffiti from the heritage realm. In her text on heritage resource management policies implemented in the South African National Heritage Resources Act (NHRA), Janette Deacon writes: “Staff members responsible for implementing the NHRA often find it impossible, however, to identify graffiti artists who damage heritage places” (Deacon, 2010, p.167). Note that even though graffiti creators are labelled as ‘artists’, Deacon considers their work by default ‘damage’. A similar tone can be heard by conservation specialist Sáiz Jiménez, who remarks that “rock art in shelters is often vandalised, such as with modern graffiti that cover or obscure the

paintings” (Sáiz Jiménez, 2010, p. 9). In his monumental “The past is a foreign country – revisited”, David Lowenthal tells his readers that “graffitists avid for nominal immortality defaced monuments in ancient Greece and Pompeii, as did Renaissance scribblers in the Catacombs” (Lowenthal, 2015, p. 504). Note that the latter three authors consider different aspects of the graffiti phenomenon: whereas Deacon and Sáiz Jiménez likely refer to contemporary sprayed graffiti, Lowenthal uses a more moderate vocabulary to talk about ancient inscriptions.

This ambivalent value judgement of graffiti also surfaces in various graffiti documentation projects. Documenting ancient graffiti (like Barber, 2007; Cosentino et al., 2015; Sou, 2016; Valente & Barazzetti, 2020) typically raises fewer critical questions, as if these would have an inherent greater value than modern graffiti. Present-day graffiti might not address future historians, but neither did ancient graffiti. They served a contemporary audience which could only understand those graffiti if they knew the names and the social, cultural and political contexts. Only when framed

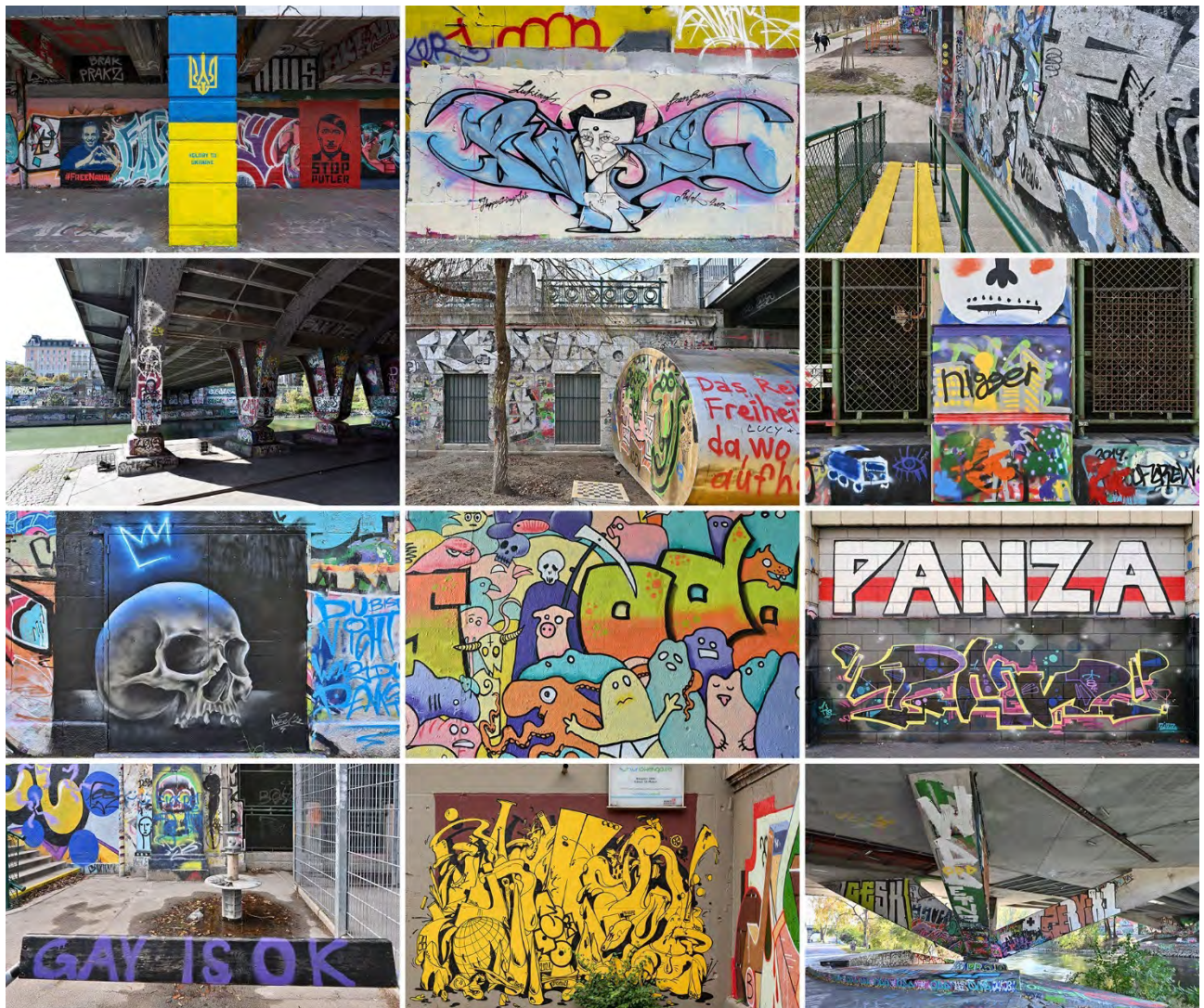


Figure 1. The wide variety of graffiti and graffitied surfaces found along the Donaukanal.

within these (pre)historic contexts and combined with other data sources, ancient graffiti do become archaeologically valuable. So why would this rule not hold for contemporary graffiti, for which such contexts are commonly well-known and for which the (spray) painted pieces, murals, and characters often exhibit a clear(er) artistic merit?

The authors share with de la Iglesia (2015), Holler (2014) and Novak (2014; 2015) the opinion that proper documentation of contemporary graffiti should get more academic attention. Without a digital record as a surrogate for a real-world object, any research is bound by graffiti's ephemerality. And without long-term archival goals, these digital surrogates are constrained by the impermanence of digital technology. Even though the lack of a digital record can represent the vision that graffiti are and should remain temporary, it also makes for partial and biased research: comparing graffiti based on dimensions, colour, or spatio-temporal dynamics is virtually impossible, while contentual classification and contextual interpretation remain reserved for eyewitnesses exclusively.

2. Project INDIGO

In the summer of 2020, the idea arose to document, digitally safeguard, and analyse a large part of the graffiti-scape in Vienna, Austria. The city centre of Vienna is characterised by the relatively bendy *Donaukanal* (Eng. Danube Canal), of which the surrounding public surfaces have constituted a graffiti hotspot since the early 1980s (Ringhofer & Wogrin, 2018). Every day new graffiti appear along the Donaukanal, ranging from colourful pieces and eye-catching characters on large unobstructed walls to political symbols and monochrome writing on bins, bridge pillars, and staircases (see Figure 1).

The initial idea and project drafts culminated approximately one year later in the international and interdisciplinary academic project INDIGO. Besides being a colour, the project's name stands for IN-ventory and Disseminate G-raffiti along the d-O-naukanal. Project INDIGO was launched in September 2021. Funded by the Heritage Science Austrian programme of the Austrian Academy of Sciences (ÖAW), this two-year project aims to build the basis to systematically document, monitor, disseminate, and analyse a large part of the graffiti-scape along Vienna's Donaukanal in the next decade.



Figure 2. An illustration to answer INDIGO's "What?", "Where?", "Why?" and "Who?" questions.

Although the project title discloses the “what” and “where” of this research project, it does not cover “why” project INDIGO was initiated and “who” is involved. Figure 2 clarifies that the core staff of INDIGO consist of researchers hosted at different academic institutes and non-academic organisations. All their combined inventorying and dissemination efforts aim to A) digitally preserve the Donaukanal’s distinctive graffiti-scape and B) provide unique analytical pathways for anyone interested in contemporary graffiti to disclose new socio-political-cultural research questions and graffiti-specific insights. Although these two feats characterise the “why” aspect of INDIGO, Figure 3 graphically shows that INDIGO is essentially built around four specific goals. Creating a graffiti inventory incorporates **documenting** newly produced graffiti and their **long-term digital archiving**. The unrestricted, interactive, and online **dissemination** of these digital records must empower creators, academics and non-specialists to **analyse** them.

3. INDIGO goes goINDIGO

INDIGO thus aims to mirror the actual public urban surfaces in the virtual public world of the internet to digitally preserve and investigate an urban graffiti-scape in time and space. This means that the project has both a technical- and more humanistic-oriented aspect. The first draft of

INDIGO’s project proposal already put forward the idea to cover both aspects in two different symposia. Although the COronaVirus Disease 2019 (COVID-19) was still wreaking havoc across the world, the hope was nurtured to physically bring together specific subsections of the (scholarly) graffiti community in Vienna. The initial timing of both symposia accounted for INDIGO’s project schedule to maximise the relevancy of the discussions and insights gained (see also Figure 3).

- goINDIGO2022 had been planned to take place six months into the project and tackle all the technical, logistic, legal, and ethical aspects of documenting, archiving, and disseminating graffiti. The idea of gathering experts and experience so early on was to help avoid pitfalls on various more technical topics further down INDIGO’s road.
- A second symposium—goINDIGO 2023—is planned for the end of the project. This gathering should focus on graffiti’s socio-political and cultural impact. goINDIGO 2023 will also mark the launch of INDIGO’s online platform and showcase how the graffiti (meta)data stored in it enable societal and cultural insights. In this way, specialists from many different fields such as art history, philosophy, cultural studies, law, urbanism, psychology,

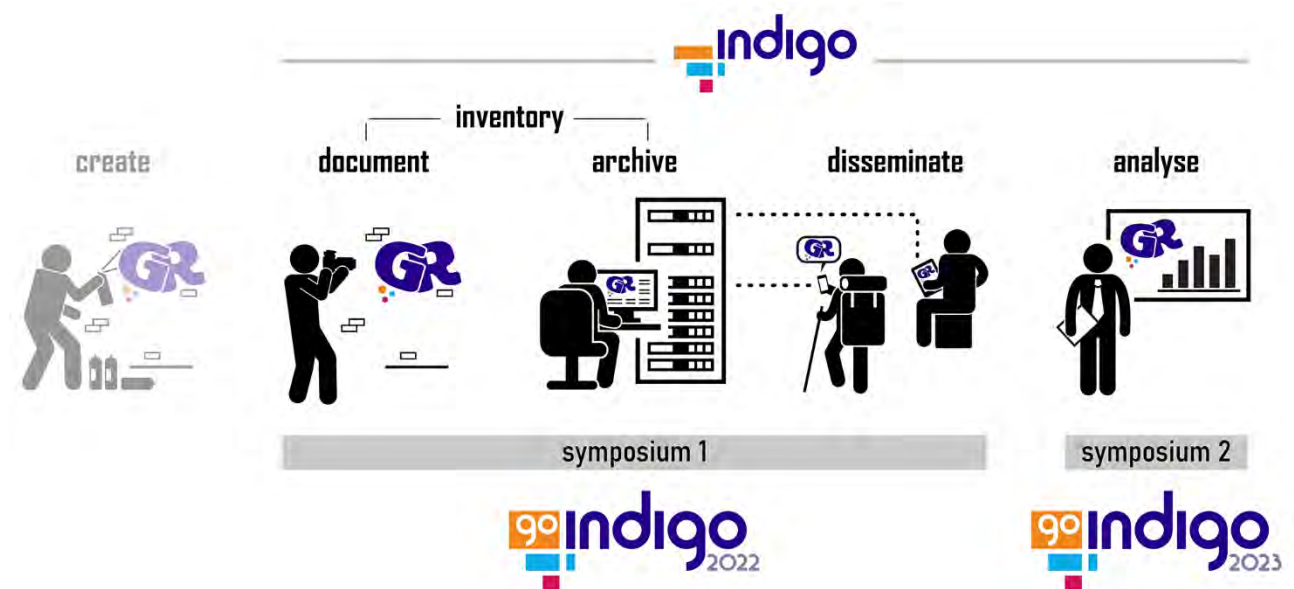


Figure 3. The main goals of INDIGO and how they fit within the two goINDIGO symposia.

to have pulled off two highly interactive discussion sessions between those who create graffiti and those who document/archive/disseminate them. Both discussion sessions were joined by six graffiti creators operating in Vienna. This led to some fascinating insights which are also reflected in these proceedings.

5. Overview of This Volume

We have divided all papers across three sections which correspond to the main themes of goINDIGO 2022: documenting, archiving, and disseminating. It is helpful to consider the INDIGO research pillars (Figure 5) to understand the exact scope of these terms.

- **Documenting**, in INDIGO's view, is different from 'recording'. Many techniques exist to record the various characteristics of heritage data: a laser scanner, a photo camera, a piece of paper and a pencil, a thermal camera, and a balance. One can record data with all five, but their output will be vastly different. In a typical workflow, one expects this output to adhere to certain criteria, since it should answer or solve the problem for which data were generated in the first place. For example, answering a specific research question might need digital surface topography with mm-level spatial detail and a given georeferencing accuracy. Such goal-oriented data acquisitions are denoted as 'documenting', while 'recording' re-

fers to mere data gathering (Verhoeven, 2019). Because data are raw and typically need more or less treatment to yield usable products, data processing naturally falls under the umbrella term 'documentation'. However, Figure 5 shows that archiving also encompasses processing, so where does the boundary lie?

- **Archiving** is the act of establishing a well-curated (and openly available) archive. Like documenting, archiving should be purpose-oriented. However, the content of an archive typically needs much management, so that the stored documents are findable and can still be opened after a decade. The border between such necessary archival and documentation-related processing is not always clear-cut. For instance, adding IPTC (International Press Telecommunications Council) photo metadata is typically done before any other image processing step. Still, these IPTC values are essential from an archival point of view.
- **Dissemination** is the action of spreading data, information, knowledge or wisdom, whether in analogue, digital, or hybrid form. Scientific papers, a website, an exhibition, an archive, and a non-specialist presentation are all valid ways to disseminate (scholarly) results.

Even though many papers in these proceedings deal with two or more topics, the intention was to order the texts according to their primary focus. However, before opening the floor to those who aim to document, archive and

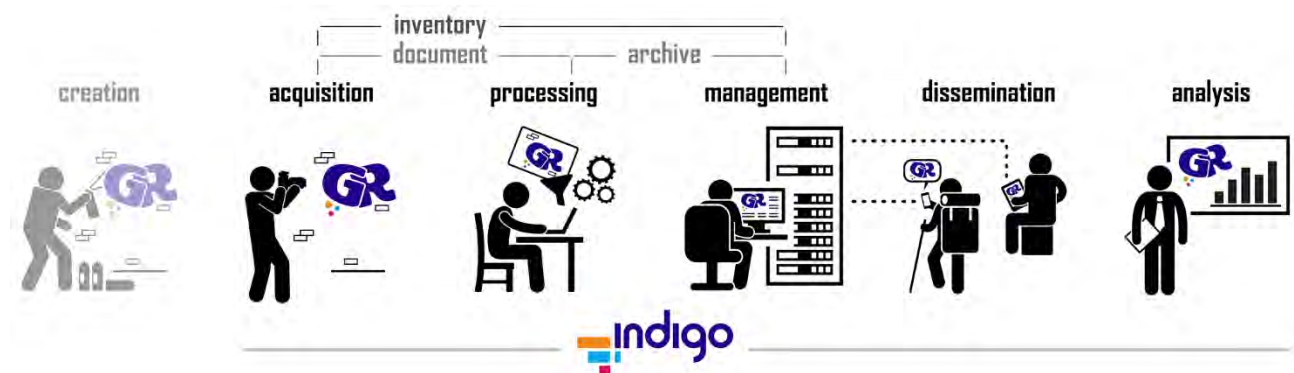


Figure 5. The INDIGO research pillars.

disseminate graffiti, we—the editors—think it is opportune to reflect on these three activities. Do those who engage in documenting, archiving and disseminating graffiti act out of self-interest, or do the graffitiists also think that these activities are of value? Graffiti creators know that they balance on (and cross) an often fuzzy legal line. But are we—the documenters, archivers, and disseminators—always considering the potential legal and ethical implications of our actions? Because these questions often remain unanswered, this volume starts with an extensive **REFLECTING** section, comprising the symposium-opening keynote address of *Alex Hale* and a reproduction of the two discussion sessions: «Creators vs Academics» and «Ethics & Legality in Graffiti (Research)».

In his text, Alex touches upon a range of topics. He voices concern on how modern tools can sustain the space between researcher and researched; he questions the role and very nature of graffiti archives, and wonders if the attempts to mass-document graffiti still rhyme with climate priorities. Due to the broad scope of his thought-provoking musings, Alex's text is an ideal proceedings opener and a good launch for the following two articles, which are slightly edited transcripts of goINDIGO 2022's discussion sessions. Both contributions are longer than the texts that follow. Still, we believe that—in combination with the opinions of Alex—they set the much-needed tone and reflective framework for everything that follows, as these discussions originated from the encounter of peers and experts in entirely different domains, and hold the potential to inspire an equally wide range of scholars, creators and other interested individuals. In addition, it is hard to find such written-out discourse between those that 'make walls speak' and those that 'listen to them'. We hope these two 'papers' provide the reader equally much pleasure and insight as they gave all discussion participants.

Kicking off the **DOCUMENTING** part are three INDIGO papers. In the first of those, *Geert Verhoeven et al.* detail project INDIGO's labour- and data-intensive approach to discovering and documenting new graffiti. The text also explores new avenues for improving the existing workflows, many of which rely on a vast number of photos. However, having a mere collection of photographs does not facili-

tate detailed and robust documentation of the spatio-temporal variations in the urban chameleon skin. That is why project INDIGO develops colourimetric and geometric image processing pipelines, described in the papers by *Adolfo Molada-Tebar & Geert Verhoeven* and *Benjamin Wild et al.*, respectively. Both articles introduce a freely available, open-source software tool to work with digital photos. Whereas Adolfo & Geert make a case for accurate image colours when documenting graffiti (facilitated by the novel Python-based toolkit COOLPI), Benjamin and colleagues resort to photogrammetric engineering and the automated generation of graffiti orthophotographs to tackle decontextualisation and documentation issues. After introducing the orthophotography concept, the authors present AUTOGRAF, a free add-on for Agisoft's image-based modelling software Metashape Professional. Since both COOLPI and AUTOGRAF use raw photographic data as input to yield qualitative archiveable outputs, these papers reside in the Documenting section.

The last two papers in this section throw a slightly different light on graffiti documentation. *Gabriele Goffriller* uses historical sources in her quest to find the two-centuries-old tags left by Joseph Kyselak. As a result of her documentation, Gabriele hypothesises that Josef Kyselak is likely the first modern graffiti tagger. The paper by *Laura Luque Rodrigo & Carmen Moral Ruiz* balances on the borderline between the Documenting and Archiving sections. The authors start by challenging the standard notion of urban art and provide a reflection on its ephemerality, which in turn guides the development of a cataloguing card suitable to document and efficiently archive this art.

By harvesting content from often forgotten online and printed sources, *Martin de la Iglesia* shows yet another way of acquiring (meta)data on graffiti. His paper addresses the paradox that, despite all the published literature, it is still hard to find comprehensive and structured graffiti metadata records. Since the article mainly focuses on all operations necessary to turn these collected graffiti records into a usable database with clean and complete metadata, Martin's writing opens the **ARCHIVING** section. The importance of proper metadata, and more specifically, unambiguous and unified terminology, is also stressed in the following papers. *Chiara Ricci et al.* elaborate on how the CAPuS project first

worked on a multilingual illustrated glossary of graffiti and street art-related terms to define a common language between different stakeholders. These terms support better teaching and more objective documentation of graffiti and street art, materialised in the open-source and online digital CAPuS repository, which archives and disseminates information about contemporary murals and metal sculptures. With their attempt to establish a commonly-accepted graffiti thesaurus, *Jona Schlegel et al.* elevate the glossary idea. The text outlines the technical differences between a glossary, a thesaurus and other knowledge organisation systems. At the same time, the authors try to develop a robust framework to define graffiti within the broader ‘mark-making’ concept. The paper first reviews the history of the Italian term *graffiti* to determine later that it constitutes a triple entity. Various examples then challenge the solidity of the new definition. Such a thought exercise is valuable and much-needed, not only because of the multiple meanings attributed to the term graffiti (as is evident in these very proceedings), but also to precisely define the overarching thesaurus term. The paper ends with an outlook on semantic technologies that can store this thesaurus. Although organisation schemes like thesauri help to (hierarchically) manage information and knowledge of a specific domain, a knowledge representation scheme or formal ontology aims to structure that particular field semantically. In the digital humanities, the Conceptual Reference Model (CRM) is the best established, but still underused, formal ontology. *Nina Richards et al.* detail how the CRM can enable the semantic integration of various humanities data sets, and why it is the underlying framework for the OpenAtlas database that will store project INDIGO’s data.

The final two papers in this section form great examples—each in their own way—of extensive graffiti archives. We learn from *Sven Niemann*, the symposium’s second keynote speaker, how INGRID or the Information System on Graffiti in Germany collects its photographs and how the database records are curated. Examples showcase how INGRID’s neatly managed metadata enable the analysis of graffiti’s stylistic and linguistic aspects while also supporting the study of long-term graffiti developments. Whereas only a part of INGRID’s records is available online so far (and exhaustive access is possible solely for research purposes),

the extensive Spraycity archive is entirely open-access. Spraycity contains two decades of photos primarily shot by the archive’s owner *Stefan Wogrin*. Stefan’s text first provides a historical introduction to various graffiti archives, later explaining Spraycity’s documentation approach and its challenges concerning categorising, geotagging and hosting large quantities of data. Through unique online graffiti maps, an extensive website blog and the Offline Graffiti Magazine, Spraycity also engages in various graffiti dissemination activities. The paper thus bridges nicely to the last section of these proceedings: **DISSEMINATING**.

Whether they disseminate graffiti as analogue real-world representations, Virtual Reality (VR) entities, or hybrid Augmented Reality (AR) pictures, all papers in this section present exciting ways to spread information about graffiti. *Rita L. Amor Garcia* opens this last section by discussing the ethics and practice of *in-situ* graffiti conservation. Those people claiming that graffiti are, and should stay, ephemeral might be surprised that many creators interviewed by Rita do not consider this a given and even use specific materials to make their creations last longer. And although the latter attitude might not be universal, creators and conservators generally agree that ‘location’ or ‘place’ is central to their decision-making process. From this viewpoint, it makes sense to develop solid ethical and practical frameworks to guide decision-making on *in-situ* preservation (especially knowing how upset graffitiists and non-graffitiists can become when works get relocated—and thus decontextualised—from their place of origin to a museum).

How the analogue, *in-situ* reality can be augmented with a digital layer to combat the decontextualisation of graffiti and increase their understanding, gets explored by *Flaminia Cavallari et al.* Using a case study in Rome (Italy), the paper provides quantitative and qualitative insights into the current technical capabilities and limitations of graffiti communication via such AR solutions. When the real-world representation is entirely removed from the graffiti communication, one ends up with a VR depiction. *Ljiljana Radošević* presents the process of setting up such a VR graffiti gallery for Belgrade (Serbia), with all the logistical and technical challenges it can bring along: from selecting suitable photographs to getting specific urban surfaces digitised.

Although some of the described technical struggles (like creating a photo-based digital 3D surface of a long and tall wall) are solvable, the text does bring into focus the ever-increasing and ever-widening technical savviness and expertise required from curators and exhibition teams wanting to meet particular changing museological needs.

However, the latter do not have to be only digital. The last two contributions of these proceedings exemplify this nicely. *Klaudia Kreslehner* sketches the history of graffiti in Linz (Austria), documented in the “Graffiti & Bananas” exhibition, which she curated. *Christine Koblitz* turned the former historical museum of Vienna into an urban playground with her “Takeover” initiative. Although both exhibitions had a slightly different focus (“Graffiti & Bananas” being more history- and information-oriented, with “Takeover” more street-culture tailored via the inclusion of skateboarding), each initiative questioned if and how (a) typical outdoor activity(ies) can function in a standard museological setting without losing the original spirit. Even though documenting and archiving graffiti also have a role to play, truly (re) defining and exploring the boundaries of graffiti (as a phenomenon, as a process, as an object) primarily occur via dissemination initiatives like those of Klaudia and Christine, but equally-well those of Flaminia and colleagues, Ljiljana, and Rita. After all, graffiti are created for an audience. They are—as Reynolds (1975) called them—the ‘Magical Symbols’ that fill our lives in one way or another.

6. Conclusion

goINDIGO 2022 has managed to bring various disciplines together; that is why the editors hope that the contributions in these proceedings can collectively be considered a proper methodological status quo on the inventorying and dissemination of graffiti records. Because most academic efforts always focused on the analyses of graffiti, these proceedings also hope to kickstart further discussion and interdisciplinary scholarly action on the (need for) proper documentation and dissemination of graffiti. Critical, maybe even uncomfortable, reflections like those vented in the discussion sessions or covered by Alex Hale form an essential part of this discourse.

Acknowledgements

Project INDIGO, and by extension these proceedings, are made possible via funding from the Heritage Science Austria programme of the Austrian Academy of Sciences (ÖAW).

Conflict of Interests

The authors declare no conflict of interest.

References

- Barber, D. M. (2007). *3D laser scanning for heritage: Advice and guidance to users on laser scanning in archaeology and architecture* (Vol. 51326). English Heritage.
- Blanché, U. (2015). Street Art and related terms – discussion and working definition. *Street Art & Urban Creativity Journal*, 1(1), 32–39. <https://doi.org/10.25765/sauc.v1i1.14>
- Chaniotis, A. (2011). Graffiti in Aphrodisias. Images—Texts—Contexts. In J. A. Baird & C. Taylor (Eds.), *Routledge Studies in Ancient History. Ancient Graffiti in Context* (pp. 191–207). Routledge.
- Colavitti, A. M. (2018). *Urban Heritage Management: Planning with History. The Urban Book Series*. Springer International Publishing. <https://doi.org/10.1007/978-3-319-72338-9>
- Cosentino, A., Stout, S., & Scandurra, C. (2015). Innovative Imaging Techniques for Examination and Documentation of Mural Paintings and Historical Graffiti in the Catacombs of San Giovanni, Syracuse. *International Journal of Conservation Science*, 6(1), 23–34.
- Curtis, C. (2005). *What is Graffiti Archaeology?* <http://graffarc.org/about.html>, accessed 12/01/2022.
- de la Iglesia, M. (2015). Towards the Scholarly Documentation of Street Art. *Street Art & Urban Creativity Journal*, 1(1), 40–49.
- Deacon, J. (2010). Heritage Resource Management in South Africa. In P. A. Shackel (Series Ed.) & P. M. Messenger & G. S. Smith (Vol. Eds.), *Cultural Heritage Studies. Cultural heritage management: A global perspective* (162–175). University Press of Florida.
- The European Task Force on Culture and Development. (1997). *In from the margins: A contribution to the debate on culture and development in Europe*. Council of Europe Publishing.

- Forster, A. M., Vettese-Forster, S., & Borland, J. (2012). Evaluating the cultural significance of historic graffiti. *Structural Survey*, 30(1), 43–64. <https://doi.org/10.1108/02630801211226637>
- Garrucci, R. (1856). *Graffiti de Pompéi: Inscriptions et gravures. Tracées au stylet. Recueillies et interprétées* (Seconde édition augmentée). W. Remquet et Cie.
- Holler, R. (2014). Graffdok — A Graffiti Documentation Application. In A.-L. Lamprecht & T. Margaria (Eds.), *Communications in Computer and Information Science: Vol. 500. Process Design for Natural Scientists: An Agile Model-Driven Approach* (pp. 239–251). Springer. https://doi.org/10.1007/978-3-662-45006-2_19
- ICOMOS International Committee on Cultural Tourism. (2022). *ICOMOS international cultural tourism charter. Principles and guidelines for managing tourism at places of cultural and heritage significance*. ICOMOS. https://drive.google.com/file/d/1_raDTw-4cPJTKx5Gv78QKTSR_ysghjO5/view, accessed 16/08/2022.
- Longstreth, R. W. (Ed.). (2008). *Cultural landscapes: Balancing nature and heritage in preservation practice*. University Of Minnesota Press.
- Lovata, T. R., & Olton, E. (Eds.). (2015). *Understanding graffiti: Multidisciplinary studies from prehistory to the present*. Routledge.
- Lowenthal, D. (2015). *The past is a foreign country - revisited*. Cambridge University Press.
- McDonald, F. (2013). *The popular history of graffiti: From the ancient world to the present*. Skyhorse Publishing.
- Novak, D. (2014). Methodology for the measurement of graffiti art works: Focus on the piece. *World Applied Sciences Journal*, 32(1), 40–46. <https://doi.org/10.5829/idosi.wasj.2014.32.01.301>
- Novak, D. (2015). Photography and Classification of Information: Proposed Framework for Graffiti Art. *Street Art & Urban Creativity Journal*, 1(1), 13–25. <https://doi.org/10.25765/sauc.v1i1.22>
- Obad Šćitaroci, M., Bojanić Obad Šćitaroci, B., & Mrđa, A. (Eds.). (2019). *The Urban Book Series. Cultural Urban Heritage: Development, Learning and Landscape Strategies*. Springer International Publishing. <https://doi.org/10.1007/978-3-030-10612-6>
- Reynolds, R. (1975). *Magic symbols: A photographic study on graffiti*. Graphic Arts Center Publishing Co.
- Ringhofer, A., & Wogrin, S. (2018). Die Kunst der Straße – Graffiti in Wien. *Wiener*, 428, 46–53. <https://wiener-online.at/2018/05/02/die-kunst-der-strasse-graffiti-in-wien/>
- Ronchi, A. M. (2009). *Eculture: Cultural content in the digital age*. Springer. <https://doi.org/10.1007/978-3-540-75276-9>
- Sáiz Jiménez, C. (2010). Painted materials. In R. Mitchell & C. J. McNamara (Eds.), *Cultural heritage microbiology: Fundamental studies in conservation science* (3-13). ASM Press.
- Sou, L. (2016). *Carlisle Castle, Cumbria A Geospatial Survey of Historic Carvings and Graffiti* (Historic England Research Reports 53-2016). Historic England. <https://doi.org/10.5284/1046204>
- Valente, R., & Barazzetti, L. (2020). Methods for Ancient Wall Graffiti Documentation: Overview and Applications. *Journal of Archaeological Science: Reports*, 34, Part A, 102616. <https://doi.org/10.1016/j.jasrep.2020.102616>
- Verhoeven, G. J. (2019, September 2). *The 3D datafication of cultural heritage: More than just a flash in the pan?* CIPA 2019 Ávila - The 27th CIPA Heritage Documentation international symposium “Documenting the past for a better future”. Conferences and exhibitions center “Lienzo Norte”, Ávila, Spain. <https://doi.org/10.5281/zenodo.3384881>