RESEARCH ARTICLE

Submitted: January 11, 2023
Accepted: July 29, 2023

Pull Tab Archaeology

Jobbe Wijnen
Independent researcher, International Centre for Pull Tab Archaeology, the Netherlands
jobbew@freedom.nl

Abstract

The Pull Tab Archaeology project (PTA project) was launched in 2018, with the aim of diving straight into the creative, communication-oriented and fluid archaeological experiences of the life world, and of breaking some implicit rules of formal (Dutch) archaeology in the process. As narrowly defined, the project comprises the study of beverage can pull tabs. However, it also has broader significance due to its focus on archaeology as a craft, on archaeological experiences and on Do-It-Yourself (DIY) culture. The project emerged out of Dutch conflict archaeology in cultural resource management, and involved a world-spanning social-media citizen-science project. Over 4700 pull tabs from 37 countries were recorded, and c. 100 pull tab types – or "species" – were found. Drawing on the work of David Gauntlett, the article proposes that experiential DIY archaeological craft creates social capital and can be a modest remedy for our late modern world, which is afflicted by alienation from its environment and by solastalgia. The article proposes that archaeology as a tool for reconnecting is of greater importance for current society than our traditional focus on knowledge production for cultural histories and the vulnerability of heritage.

Introduction

"What if we – undeterred by the sarcasm of some colleagues – create an archaeological typology of beverage can 'pull tabs'?" It was this thought which provoked a playful but equally serious experiment, situated somewhere between citizen science and Do-It-Yourself (DIY) culture on the one hand and historical archaeology on the other; a project with the aim of breaking some implicit rules of formal Dutch archaeology and of diving into the

Keywords: Anthropocene, beverage cans, citizen science, craft, late modern archaeology, pull tabs, ring pulls, solastalgia

Journal of Contemporary Archaeology 10.2 (2023) 258–290
ISSN (print) 2051-3429 (online) 2051-3437 https://doi.org/10.1558/jca.25283

equinoxonline

FIGURE 1. The Pull Tab Archaeology World Typology, 2020.

Journal of Contemporary Archaeology 10.2 (2023) 258–290
ISSN (print) 2051-3429 (online) 2051-3437 https://doi.org/10.1558/jca.25283

creative, communication-oriented, fluid archaeological experiences of the life world. The Pull Tab Archaeology project (PTA project) was launched in 2018, with the attitude of "let's just start, and reflect later on what we apparently did" at its heart. This article presents the project results.

As narrowly defined, the PTA project comprised the study of beverage can pull tabs as a late-modern commodity and historical artefact. In its broader significance, the project tried to push the boundaries of archaeological practice, to proof it for the twenty-first century in two ways. First, it designed a social-media-based citizen-science archaeology project which *globally* crowd-sourced a typology and reference collection, resulting in the publication of a global typology (Wijnen 2020; see also Figure 1). Second, the project explored the meaning of what archaeology constitutes, starting from scratch with a topic hitherto only marginally explored and making the "doing" of archaeology more important than methodical rigor or knowledge production – while simultaneously not denying these scientific core values.

The article is essentially reflexive. The PTA project started as a creative burst. There was little planning and little attempt to follow the status quo. Dutch scholars would sometimes inform me that "typology" is essentially an obsolete relic from our days as cultural historians (Johnson 2019), but the PTA project has had a focus on *learning by doing* from its outset and this has had consequences for its methods.

PTA was intended as a process, more than a means to an end… or at least not to a singular end. But if I had to define its ends, it would be an unending exchange of artefacts, information, experiences, craft, stories and connections between archaeologists, metal detectorists and others, all of whom might have their own perspectives on the materials and on the project and have different motivations for participating. It works outside the system that prescribes what constitutes "genuine" archaeology in heritage management – a system designed to protect standards, but which has also made archaeological experience inaccessible to the majority of people. The PTA project attempts to smash the imagined dichotomy between experts and the public, starting from the idea that there is a need for archaeological experiences at every level of society. Pull Tab Archaeology can be a contribution to historical archaeology as well as an archaeology-as-craft, a social activity, a form of environmentalism or a way for likeminded people to connect. As I show below , PTA demonstrates the potential to create and maintain connections – or relationships – between people, matter, the environment, the past and the future.

In the following I narrate how the PTA project emerged from cultural resource management (CRM) archaeology and moved into a global citizen-science project. I then discuss some of its results from the perspective of historical archaeology, and the notions of craft and creativity that inspired the project. But first, I'd like to start with a brief history of the pull tab. It should be noted that whenever I use the word "pull tab" or "tabs" in this article, this can refer to any type of pull tab, whether zip top tabs, ring pulls, or statabs, unless otherwise specified.

Vignette 1: The Nelson Family

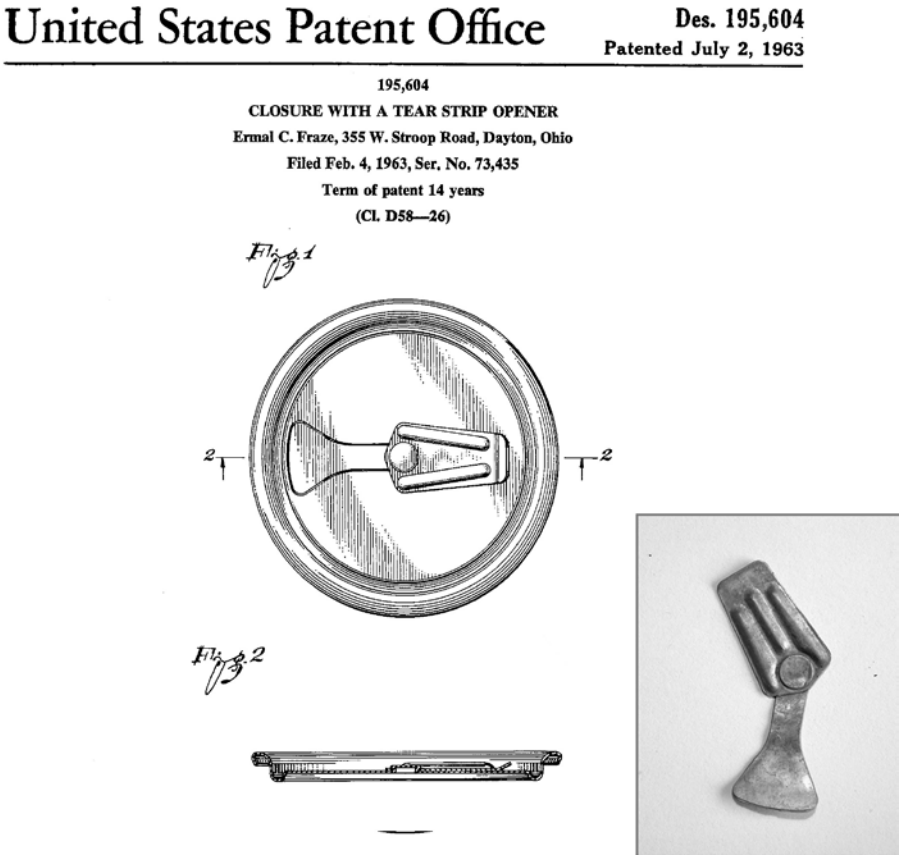
The Nelson family in Montana in 2018 (courtesy of Dick Nelson).

Jericho and Tommy Nelson are two boys who live near Twin Bridges in Montana. The area is remote to the extent that the United States Postal Service does not deliver to their doorstep, and it can be a challenge for little ones to find rewarding activities. That was until "kid explorer" Jericho, at the time five years old, found some old cans and pull tabs near an abandoned campsite in 2020. When researching the objects, his father Dick found our website and they sent the tabs to the PTA project. Jericho happened to be the first participant to send one of the original 1962 Dayton Ohio solid zip top-tabs [see Figure 2, below]. Up until that time, I had never seen one of these. When I conveyed this news, things exploded in Montana! Jericho was now determined to become an archaeologist and went on a rampage to find more and more pull tabs wherever he went. Of course, his seven-year-old brother Tommy, after seeing Jericho get a star on the global map on our website, could not be left out and he started exploring, too. In the following months the two brothers would send box after box from Montana to Europe, filled with what some may call trash, but for us was definitely treasure. "The search for pull tabs partially helped them get through Covid-19 lockdowns of 2020", their father Dick later explained.

The Beverage Can Pull Tab

For a great overview of beer can development in the USA, I recommend D. B. S. Maxwell's foundational article (Maxwell 1993), from which significant details in the following paragraphs derive.

The beverage can pull tab is an innovation to open a steel or aluminum beverage can easily. Although based on earlier patented inventions dating as far back as 1939


United States Patent Office

Des. 195,604
Patented July 2, 1963

195,604

CLOSURE WITH A TEAR STRIP OPENER

Ermal C. Fraze, 355 W. Stroop Road, Dayton, Ohio

Filed Feb. 4, 1963, Ser. No. 73,435

Term of patent 14 years

(Cl. D58—26)

Fig. 1

2 2

Fig. 2

FIGURE 2. US Patent 195,604 with the first version of a pull tab (source: Google patents) and the 1962 "Z-I-2" in our collection (inset). Note the differences in design.

(Maxwell 1993, 107; Schroeder 2017) the *first marketed* pull tab was designed by the Dayton Reliable Tool (today called DRT) company in Ohio. It comprised a solid strip of aluminum, riveted to a pre-scoured tear strip in the aluminum can end (Figure 2). By lifting and pulling the tab, its lever function cracked a score-line, which allowed the consumer to tear the tear-strip from the can and gain access to the can's contents. The Pittsburg Brewing Company was the first to sell cans with pull tabs, in 1962 (Maxwell 1993, 96).

Canned beer had been sold in the USA since the 1930s, but the pull tab revolutionized its ease of consumption. Earlier, a device called a churchkey was needed to punch triangular holes in the can end to open it. After being introduced on beer cans, pull tabs were soon adopted on tin cans containing vegetables, meat, fish and non-food products like motor oil. The PTA project's primary concern, however, is their use on beverage cans. Soon after its launch, improvements were made to the shape of the tab to prevent cuts to fingers. Several generations of solid tabs, called "pop-tops", "snap-tops", "tab-tops" or "zip tops" followed in rapid succession, and other manufacturers would copy the idea. In 1965 the first ring-shaped pull tabs, also called ring pulls, entered the market (Maxwell 1993), and would stay the dominant design until the end of the

1970s in the USA and well into the 1980s in Europe. It was replaced by the "Statab" or "Stay-on-tab", which is retained on the can after opening. Next to the invention of the two-piece "drawn and ironed" can in approximately 1970, the invention of the ring pull was likely the most important innovation in can development from the 1930s to the present. It should be noted that the ring pull does not exist as a separate object when a can leaves the shop, as it is an integral part of the can end (lid). The separate artefact only comes into existence when a consumer pops a can of soda or beer.

The ring pull and statab can be seen as iconic artefacts of late-modern capitalism and of single-use products that constitute litter. Global production rates of beverage cans are almost inexpressible in readable numbers. For reference, the Container Recycling Institute reported close to 180 billion steel and aluminum beverage cans being sold in the USA alone in 2010, of which only 49.7% were recycled in that year. The rest were either dumped in landfill or left as litter (Gitlitz 2013). Pull tabs can literally be found in (almost?) every country on the planet. Pull tabs are hated by metal detectorists and prospectors, as the conductivity of aluminum closely resembles that of gold and makes them almost impossible to ignore in a survey. From an archaeologist's perspective, the sudden appearance of large quantities of pull tabs and other single-use aluminum packaging in the archaeological record is astounding, given that aluminum did not exist until the late nineteenth century (Sheller 2014). Within one lifetime the metal has become a ubiquitous material, discarded in large quantities without a second thought. In stark contrast to this easy disposal, it takes grotesque amounts of energy to produce aluminum, consuming up to 30% of the national energy consumption in smaller nations and causing devastating pollution and destruction of habitats and ecosystems (Sheller 2014). Expanding on Mimi Sheller's book *Aluminum Dreams*, I propose that while the pull tab is an icon of technological progress and the space age, it is just as much an icon of the Anthropocene and a potential dating-fossil of our downfall as a biological species for future archaeologists, if these then exist then… In any case, pull tabs will likely be still around long after our planet has returned to being a lifeless rock in the skies.

Pull Tabs in Archaeology

Contemporary archaeology – in this paragraph understood as late-modern historical archaeology – does not play a significant role in Dutch or most European universities and is only slightly more common in Dutch CRM (for a recent view see McAtackney 2020). Literature on beverage cans as artefacts is close to non-existent for European contexts. However, Wout Arentzen (and others) founded "Blik op Blik", a Dutch association for beverage can collectors, as long ago as 1982.[1] Arentzen was one of a few in the club who took an archaeological perspective to collecting, and in the 1990s he wrote an article about the development of cans. The original draft included an historical overview of pull tab development, but unfortunately it was never published (Arentzen 2022). In 1992 Michael Shanks and Christopher Tilley published a comparison of British and Swedish beer cans (Shanks and Tilley 1992). In a chapter of their groundbreaking book

1. The association Blik op Blik (Focus on Cans) was disbanded in 2022 (Stichting Erfgoed Nederlandse Biercultuur 2023).

on archaeological theory, the authors study the relationship between beer can designs – here as the label on the can – and social values and constraints connected to drinking alcohol, and make a comparison between the UK and Sweden. They conclude that

> [t]he differences between British and Swedish can design may be understood as different ideological 'resolutions' of the consumption/discipline contradiction […]. The more alcohol is considered dangerous, as in Sweden, the greater the number of codes employed [in label design] to mediate the contradictions involved in consumption. (Shanks and Tilley 1992, 240)

Shanks and Tilley did not look at similar relationships regarding the design of the metal can-body itself or the pull tab, but they did mention a cultural effect in Sweden: cans

> opened out a new way to drink appealing to the counter culture of youth groups in which the beer can could literally be ripped open with the forefinger, the contents drunk, and the can subsequently crushed and discarded – a style of drinking which took place on the streets and was heavily loaded with a deliberate flaunting of governmental restrictions and control of alcohol. (Shanks and Tilley 1992, 237)

This provides an interesting starting point to look at how and why people use and treat cans and pull tabs.

In the USA and Canada, with their stronger roots in historical archaeology, there is more literature on the archaeology of beverage cans available, but only slightly. Important pioneering work on the archaeology of (beer) cans includes the aforementioned work of D. B. S. Maxwell (1993), and earlier work on tin cans by James T. Rock (1984). The strength of these works stands even after more than 30 years. However, European and other markets did not follow the US example in all aspects or at a similar pace, which limits the use of these works in different contexts.

Arizona University's famous "Garbage Project" also needs mentioning here. This project used a basic but functional pull tab typology in the 1980s and 1990s, which has to be credited as the first typology published academically (Rathje and Murphy 2001, 26). It worked as a field guide that made it easier to identify beverage brands in collected landfill samples quickly. The limitations of this approach are discussed further below, in the results section.

Rathje's work was recently expanded on by William Schroeder, who constructed an overview of the development of early pull tab variants based on research on patents. Schroeder proposed structuring pull tab variation in a morphological cladogram as traditionally used in biological species taxonomy (Schroeder 2017) – an appealing idea that the PTA project would adopt. The strength of this work lies in its overview of design development and can be seen as vital preliminary work for field surveys like the PTA project. Other references to the archaeology of pull tabs or beverage cans are scarce, but can be found in occasional research where pull tabs were found and recorded, usually as a datable artefact in CRM studies. One such study is the work of Binghampton University at the 1969 Woodstock festival venue, which recorded pull tabs in the hope of locating the exact spot of the historical festival stage (Associated Press 2018). A

more in-depth look at how the PTA project can be contextualized within archaeology is discussed later in this article.

Vignette 2: The Pull Tab Lamp

The pull tab lamp shade as displayed in the International Centre for Pull Tab Archaeology in Wageningen, the Netherlands.

Kerry Griechen, from Lafayette in Louisiana, was an internationally recognized nature photographer, until misfortune struck and his health tied him to his home. While watching a 2020 video of the PTA project on the *Atlas Obscura* website he recalled that he owned a piece of art made from pull tabs decades ago and traced me down on Facebook. "Hello Jobbe", he wrote, "I made a lamp shade from pull tabs while in college in Fort Wayne, Indiana in the early 1980's. I still have it! I would be happy to donate the lamp and shade to your museum if your community can raise the funds for shipping." The PTA project takes a general stance of not paying for artefacts, but here I just had to say yes! A big box was delivered a few weeks later, with the weirdest and coolest object I was ever sent by mail. The lamp is now proudly one of the top pieces of the collection. Creators of art like this usually know in which period the object was constructed and which brand of beer they were drinking at the time, which gives the object context and makes pull tabs datable. Griechen: "I do recall two of the beer brands being Blatz and Weidemann's. Both cheap beer for poor college students!"

The Origin of the Pull Tab Archaeology Project

To understand how the PTA project started, we need to look at Dutch World War II conflict archaeology. The emergence of modern conflict archaeology in the Netherlands after 2010 was a quite sudden and revolutionary break with archaeological tradition. It was not academic interest that had inspired this development, but rather *public interest* in

World War II heritage and history (Wijnen *et al*. 2016). CRM archaeology took the lead in this development, confronting policymakers and archaeological archives with new challenges, such as evaluating, selecting and conserving large quantities of modern, mass-produced metal and plastic artefacts. A sense of pushing boundaries was present among Dutch conflict archaeologists at the time, but it also triggered a critique: was there enough academic relevance to justify the effort?

In World War II contexts the topsoil is of great importance and has been well surveyed. Beverage can pull tabs, dating from the 1960s to the present, were often part of the collected sample, but were usually discarded. To understand the irony of the PTA project, one needed to pick up a pull tab only once and ask the senior in charge if this qualified for field selection. At best this would be answered with a grin, but frustration could also be part of the response. Why pull tabs did not qualify was not addressed in any detail and seemed to draw on an arbitrary disqualification as being "too recent". In a rebellious response, I started to maintain a small and unregulated shadow collection in 2012.

The Blue Pictures

The desire to understand these artefacts grew quickly, and it was in fact a publication from a non-archaeologist that pushed the PTA project forward. This comprised what I came to refer to as "the Blue Pictures": two meme-like[2] photographs that had popped up on early metal detectorists' websites and messaging boards.[3] They showed a bunch of numbered ring pulls and statabs on a cyan blue background and were usually accompanied by the line "Most of these pull tabs are no longer in production" (Figure 3). The

FIGURE 3. One of the "Blue Pictures" from 2002. The poor resolution of the image is intrinsic to this 20-year-old digital artefact (courtesy of Wilhelm Bos).

2. Meme: "A unit of cultural information, such as a cultural practice or idea, that is transmitted verbally or by repeated action from one mind to another" (*American Heritage Dictionary of the English Language*, 5th Edition)
3. For reference it is good to know that metal-detecting by non-archaeologists was informally tolerated in the Netherlands up to 2012, after which detecting and digging up to 30 cm was formally legalized in the Dutch Heritage Act.

author of the pictures was Wilhelm Bos, a Dutch metal detectorist and owner of the *Piepstok* (Beeping Stick) website.[4] Bos added the pictures in 2002, which makes him likely the first person in the Netherlands to give pull tabs more than average attention. It triggered curiosity: was Bos's claim correct, and how many types had existed in total? I retrieved the Blue Pictures in 2020 on Bos's website, which amazingly is still partially online in its original hand-coded html design – itself a relic of the almost forgotten digital DIY age of the late 1990s and early 2000s.[5]

First Attempts: Typology 1.0

In 2014 the first nine-type, one-page, A4 size PDF overview was constructed, titled *A Typology of Pull Tabs in the Netherlands* (translated from Dutch). Colleagues responded by sending more pull tabs, which provoked expanded editions, and soon the "national focus" became an obstacle to further development. As the distribution of pull tabs and beverage cans is the result of a global multinational market (Sheller 2014) the only logical option was to go global.

Towards a Crowdsourced World Typology

In 2018 the PTA project was launched, with the aim of constructing a world-spanning typology (Wijnen 2018, see also the project website[6]). I chose crowdsourcing as the most feasible method. Crowdsourcing is "the practice of obtaining needed services, ideas, or content by soliciting contributions from a large group of people and especially from the online community".[7] Today it is often called citizen science. Citizen science has proven to be effective for gathering data in many types of projects. When the PTA project started in 2018, another Dutch citizen science archaeology project, titled "Heritage Wanted" (*Erfgoed gezocht*) was in its preparatory stages (Lambers *et al*. 2019). This project asked participants to collect data from digital LiDAR images, which they could access online from their homes. The PTA project would take this one step further, in that it would ask people to help build a *physical* archaeological reference collection: people had to ship the artefacts by mail. This approach had two rationales:

- from a methodical perspective, one needs to have a reference collection, because the comparison of tiny details is necessary and photographs alone are inadequate for this; and
- I wanted people to *handle the materials themselves*, as I see this as an important aspect of archaeological experience.

Here the project finds part of its broader significance, as CRM usually tries to prevent lay people handling artefacts. I revisit this topic more in detail in a section on DIY culture below.

4. www.piepstok.nl.
5. http://www.piepstok.nl.
6. www.pulltabarchaeology.com.
7. *Merriam Webster Dictionary*, https://www.merriam-webster.com/dictionary/crowdsourcing.

Social Media Crowdsourcing

The PTA project started with a "launch video" on YouTube (Wijnen 2018), which was then shared on other social media, the Contemporary and Historical Archaeology in Theory mailing-list server and the project website.[8] Facebook and Instagram would serve as the main platforms for public outreach. Time was particularly ripe for Facebook, as in 2018 the social media platform was reported to have 2.27 billion monthly active users globally (Facebook 2018). The video received many views there in the first months and has had over 4000 views in total up to today. The strategy often consisted of contacting individuals directly when they had published pull tab-related posts on social media, or included beverage-can related hashtags.[9] People regularly would find an old beer can and jokingly make an archaeological reference to it on Instagram, to which I would respond: "Could you send it to us for our project?" After some initial surprise many of these people offered to help.

I would provide regular video updates on the project's channels, and I tried to direct people to the main PTA website. Every video would end with a call to action. In the early days I distributed a printable form to record contextual data; however, I soon dropped this, as I wanted to encourage people to send pull tabs in their own particular way. The most important pillars of the PTA project were *participation*, *creativity* and *process*; *not* scientific rigor. Quality demands may discourage people and when lay people do archaeology they should be allowed to screw up.

The tone of voice in the project videos would alternate between seriousness and irony. Creating the videos was time consuming. It took between four and ten hours per video, with a total of *c.* 70 videos in three years. They helped create a slowly growing community of fans and served to keep the project digitally alive. This helped news media to notice the project, too, most notably the *Atlas Obscura* website in the USA and – with slight help from me – the national Dutch broadcast organization MAX (Leigh Hester 2020; Omroep MAX 2020).

Recording Pull Tabs

When people sent in their pull tabs, they would be rewarded with a "star" on a digital map (Figure 4).[10] Shipments were assigned batch numbers, and the pull tabs were recorded in a database. New types would be assigned names and were stored in a separate reference collection. Participants were asked to come up with a nickname for new types, which helped with quick referencing. All participants were very conscious about thinking of a proper nickname, and I never had to reject a suggestion.

8. www.pulltabarchaeology.com
9. A "hashtag" is a keyword accompanied with the "#" symbol, which is used to help people track certain topics on social media.
10. https://pulltabarchaeology.com/global-community-map/.

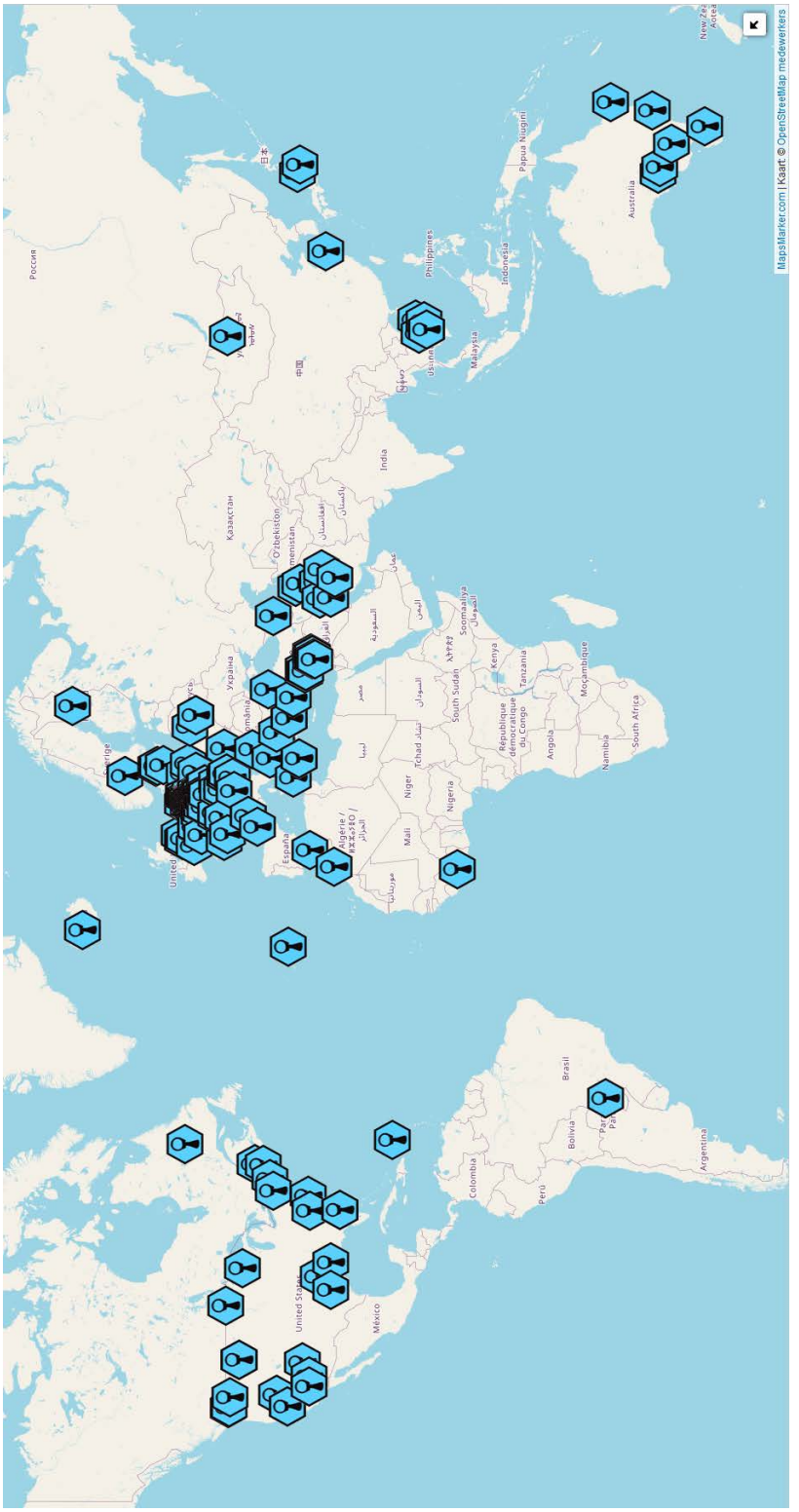


FIGURE 4. The global map that records the locations from where participants sent pull tabs (Jobbe Wijnen, 2023).

Initially I would split up shipments and assign batch numbers that would serve analysis best, but after some time – and this is an important point – I deemed it disrespectful to *change the way pull tabs were organized by the sender*. The way people collect, sort and ship has become part of the context of the materials. I started to think of the shipments as archaeological artwork, or collages.[11] Of course participants probably were not so much concerned with this themselves: they just wanted to help out.

Vignette 3: DIY Family Cartography

The Pull tab map by Remco, Ellen, Jasper and Wouter, 2018.

When Remco, Ellen and their two sons Wouter and Jasper went for a walk in Wageningen in the Netherlands, they turned it into a Pull Tab Archaeology exploration clean-up adventure. The boys went looking for tabs, and with the help of Remco they made a map on which all the artefacts were recorded. They noticed that statabs were particularly abundant at park benches and that playgrounds in neighbourhoods with cheaper (rented) housing contained more pull tab littering than playgrounds in neighbourhoods with more expensive (privately owned) houses. It made the family more aware of their environment, and up to this day they can't stop noticing tabs and cans in the streets (Batch No. 82).

Results

The following sections illustrate what the PTA project has brought together with regard to knowledge production in historical archaeology, and hint at several research questions that may guide future work.

11. See https://pulltabarchaeology.com/category/crowsourced-art/

One Hundred "Species" in Forty-Five "Geni"

By March 2023 the PTA project had collected over 4700 artefacts from 37 countries, with the help of close to a hundred participants. The number of pull tabs per country varies greatly: just a handful from Nigeria, Morocco and Tunisia; none from the rest of Africa; just a few from Asia and Latin America; and thousands from North America, the Netherlands and its neighboring European countries. The PTA collection is likely the largest collection of pull tabs in existence with an archaeological earmark. By 2020 the project had recorded close to a hundred notable variations of pull tabs, of which most were published in the *Pull Tab Archaeology World Typology* research poster in 2020 (Wijnen 2020; see also Table 1).

TABLE 1. An overview of all types of pull tabs in the PTA collection, coded by type according to family-genus-species. Often, participants were given the option of inventing a nickname for their discovery, which are provided after the coded names.

type	*# in collection*
Zip top-Tabs (9)	
Z-I-1 Fraze	
Z-I-2	2
Z-I-3	4
Z-I-4	
U-I U-tab	3
T-types (1508)	
T-I-1	230
T-I-2	46
T-I-3	31
T-I-4	2
T-I-5 BonsUwake?	3
T-II-1	43
T-II-2	15
T-III-1	21
T-III-2 Bad Bentheim	1
T-III-3 Lafayette	1
T-III-4 Titusville	2
T-IV-1 Conradi	17
T-IV-2 Bejrouth	58
T-IV-3 didi	2
T-V-1	37
T-V-2	116
T-V-3 Breche de Roland	6
T-V-4	45
T-VI-1	272
T-VI-2	3
T-VII-1	2
T-VII-2	5
T-VII-3	6

type	*# in collection*
T-VIII-1 Loch Lomond	40
T-VIII-2 Tantallon	11
T-VIII-3	4
T-VIII-4 Pearl	2
T-IX-1 Halifax	101
T-X-1 Woodstock	8
T-XI-1 Kobeshütte	2
T-XII-1	84
T-XII-2 Dwayne	22
T-XII-3	1
T-XII-4	2
T-XII generic	5
T-XIII-1 shotgun	37
T-XIII-2 Triabunna	2
T-XIV-1	2
T-XV-1	1
T-XVI-1	135
T-XVII-1	52
T-XVIII-1	23
T-XIX-1 Cambodia	2
T-XX-1 Short Tailed Beaver	2
T-XX-2 Square Beaver	2
T-XXI-1 Fruity	1
T-XXII-1 Juicy	1
T-XXIII-1 Labrador	1
L-I-1 Spam Can 1	1
S-types (3058)	
S-I-1	17
S-II-1	97
S-II-2 Grebbe	4
S-II-3	45
S-II-4 Tasmania	2
S-II-5 Sasquatch	1
S-III-1	252
S-III-2	360
S-III-3	114
S-III-5	1
S-IV-generic	4
S-IV-1	706
S-IV-2 roundnose	185
S-IV-3 proto (a&b)	60
S-IV-4 Mezni Luka	1
S-IV-5 flatnose	540
S-IV-6 three notch	167

type	*# in collection*
S-IV-7 Lichtturm	39
S-IV-8 Mongolia	17
S-IV-9 Yazd	1
S-IV-10	1
S-IV-11 Rendon	2
S-IV-12	13
S-IV-13	1
S-IV-14	4
S-V-1	11
S-VI-1	244
S-VI-2 Bimber	7
S-VI-3	7
S-VI-4 Californication	1
S-VI-5	1
S-VII-1 CHAT-arch	11
S-VIII-1	19
S-IX-1 Hornet	5
S-IX-2 Stingbee	4
S-X-1	68
S-X-2	8
S-X-3	1
S-X-4	1
S-XII-1 Josemanders	14
S-XIII-1	2
S-XIV-1 Matsumoto	1
S-XV-1	2
S-XVI-1	1
S-XVII-1	6
S-XVII-2	4
S-XVIII-1 Cootharaba	4
S-XIX-1 Berkeley notched bulbhead	2
Push button	
P-I-1	1
Miscellaneous (149)	
Other (C-type)	18
Unclassified	80
NOT-a-tab	31
	4705

Inspired by Schroeder (2017), I was persuaded to structure morphological variation in a way that is common in Linnaean and post-Linnaean taxonomy, categorizing examples into *families*, *genera* and *species* and using cladistic representations. However, I structured types slightly differently from Schroeder, based on our field data. Schroeder used

functional differences to discern different families – the push, pull and Frange families (see below), thereby perhaps taking a more phylogenetic stance concerned with common ancestors – whereas in the PTA typology morphology is the main trait for differentiation. Thus unlike with Schoeder's approach, the PTA typology poster cannot be read as a timeline, because production dates at species level were often unavailable. Some dating information was available from historical sources, but the crowdsourced artefacts themselves had little datable context. Sometimes dating was possible when people sent personal collections or objects from specific timeframes, like Terry Griechen's pull tab lamp (see Vignette 2, above). Many questions on dating, variation and geographical distribution remain unanswered, but this must be put in perspective: the massive variation we recorded emerged in a timeframe of little over 60 years, a period which is very brief in archaeological terms. With some extra study, advanced techniques and field data which also include developments in can-body design, dating will become more precise. However, it is debatable whether there is a general need for such precision.

FIGURE 5. The five pull tab families in the PTA project. From left to right: zip top tabs, ring pulls, statabs, push button and Frange family (1–4, Jobbe Wijnen; 5 courtesy of William Schroeder).

The top level of the PTA typology currently contains five families of pull tab types, as shown in Table 1 and Figure 5:

- **Zip top tabs** were invented in 1962 and were the first produced beverage can pull tabs. Zip top tabs always consist of a solid strip of metal, which had to be clamped thoroughly with fingers to tear out the tear-strip. Within a few production-iterations these were replaced with U-tabs in 1964–1965. U-tabs are essentially better-designed zip top tabs with an improved and rounded edge. All zip top tabs were likely already out of production in the USA at the end of the 1960s, and our data shows they were likely never produced or sold in Europe.
- **Ring pulls** were invented and first marketed in *c.* 1965 in the USA (Maxwell 1993) and *c.* 1966–1967 by the Heineken Company in the Netherlands (Van Vlierden, pers. comm 2020). Ring pulls count as the classic pull tab, and replaced the zip tops. They have a ring to – theoretically – put your finger through for a better grip. This, however, was not possible in all types within this family, as some were too small. Ring pulls remained the dominant pull tab family in Western markets until the mid-1980s, and production stopped in Europe *c.* 1990. However, the PTA project found they still are the dominant type of tab in markets in the Middle East and Asia, which for yet-unknown reasons has never made the switch.

- **Statabs** – 'stay-on tabs' – are retained on the can after opening and were invented by Omar Brown of the Dayton Reliable Tool Co. in 1967 (Patent US 3446389), but not marketed in the USA until 1975 with a design called the 'easy-open wall' from Daniel F. Cudzik of Reynolds Metals Company (patent US3967752A). Statabs were introduced in Europe in the 1980s, and this is the dominant family in all Western markets today.
- **Push button cans** are a tear-strip-based alternative for pull tabs. Push-button can-ends hold two round or square "buttons" which had to be pushed in using fingers to open the can. Although push buttons are not pull tabs, they are included in the PTA typology for completeness given their comparable function.
- **Frange family tabs** (Schroeder 2017) are pull tabs, but seal a can in a different manner. Instead of having a tear strip with scoreline in the aluminum end, they consist of two layers of material pressed or glued together at the two sides of the drinking opening. None of the 4700 pull tabs sent to the PTA project were Frange family tabs. This may indicate that they were rare, but also that they are less found by metal detectorists due to their thinner, flimsier and more degradable construction.

Within these five families the PTA project found close to a hundred different types, which are structured into genera and then species. Pull tab speciation revolves around tiny morphological differences. This begs the question as to which variations constitute different species, and which are merely variations within one species – a dilemma just as familiar in biology (see Barraclough 2019). For example, looking within the T-V genus, the variations between the four species consist of rings having either two dents in the upper part, or no dents, and two tiny beads beside the rivet, or no beads (Figure 6). All possible combinations of these two traits occur, and their meaning is currently not understood. It might be a functional difference, but it might also be that the designers simply introduced aesthetic variations with each iteration, or during refurbishment of the machinery, presses and dies.

Pull tab variation is much easier to understand at the genus level. The PTA project identified 45 geni, which each hold species of a similar basic shape. For example, despite their differences all T-Vs have a similar and easily recognizable outer shape at macro level (Figure 6). In older ring pulls and pre-2000 statabs, manufacturers usually maintained their own brand-specific design for longer periods of time. The Continental Can Company's typical T-I style D-shaped ring-pull design knew at least four species over time and basically remained the same from the end of the 1960s until ring pulls were abandoned in 1991 and Continental ceased to exist (Figure 7).

In recent statabs (>1990), the differences at genus level tell a more complicated story, as designs are less brand specific. The S-IV genus currently holds 14 different species with morphological variations which are manufactured in many combinations today. One employee of the Ball Corporation shared that within the spectrum of S-types there are copyright-protected types as well as "open" designs, which are free to be produced by different manufacturers. Why and when morphological changes are introduced in recent statabs is currently unclear. Explanations in terms of more economical production

FIGURE 6. Species 1–4 in the T-V genus: T-V-1, T-V-2, etc.

FIGURE 7. The typical D-shaped design of the T-1 genus from Continental Can was a recognizable feature for tabs from this manufacturer for over 20 years between 1968 and 1991. The bottom right "T-I-5 Bons-U-Wake"-type ring pull had a smaller ring and new O-shape to fit the smaller can-ends that were introduced in the mid-1980s.

methods or improved functionality can almost certainly be ruled out. There is still a lot to learn about the nature of recent pull tab variation. Multinational companies can be hesitant to share production information and are known to have notoriously short memories with limited historical production archives, especially after takeovers. Archaeological analysis of the cans and tabs may soon be the only way to find out how beverage can production operated at a global scale.

Adding Nuance to Existing Theory

Besides shedding light on the global variation of pull tabs, the PTA project presents some notable observations on the archaeology of beverage cans in general. Here I provide some of them.

One observation is that the geographic distribution of pull tab variation is highly contextual, and with that both surprisingly diverse as well as surprisingly non-diverse.

- It is non-diverse as the beverage can industry is highly standardized and highly globalized. Just a few multinationals control most of the global market. According to a source at the Ball Corporation there are currently *only two* major technical systems for producing can ends with pull tabs, named the Stolle and DRT systems, named after their manufacturers.[12] As our data show, some of the S-III and S-IV Statab types can probably be found in most countries on the planet.
- Simultaneously, however, the diversity in just over 60 years is large to the extent that we cannot assume a universal global timeline. Studies from the context of the USA do not apply fully to European markets, which in turn are not comparable with Asian markets. Some examples:
  - Maxwell (1993) wrote how the statab was first marketed in 1975 and ring pull cans were phased out in 1983 in the USA. However, the PTA project found that in the Netherlands statabs were not marketed until sometime during the mid-1980s – 10 years after the USA – and ring pulls remained in production until *c.* 1990.[13] Middle Eastern and Asian markets, however, are still using ring pulls today.
  - Rathje and Murphy (2001) used a pull tab typology in the Garbage Project in which specific types of pull tabs were linked to beverage brands like "Coors beer" or "Coca Cola". This setup worked in that context, but has little meaning in Europe, as the occurrence of pull tab types does not hold a one-on-one relationship to the content, but is related to the manufacturer of the can (Rexam, Ball, Crown, Ardagh, Thomassen & Drijver, etc.).

Other observations show that the *terminus ante quem* for a certain feature or species is hard to establish. The PTA project found several examples:

- Push button cans are generally assumed to have been in production only between 1975 and *c.* 1977 (Maxwell 1993) and thus are considered easy to

12. Information from a brief phone call with an employee of the Ball Corporation about where to find information on pull tab manufacturing, 2019.
13. There are indications in our field data that these differences also exist between states within the USA.

date. However, the PTA project collected a push button can produced in Germany in 1988–1989 for special occasions and branding. And it found a historical reference to similar production by Bavaria in 1990 (Zwaal 1993, 371), with minor alterations to the original design.

– S-II statabs are mainly associated with the 1990s in Europe. They left shops somewhere in the early 2000s, when they were probably replaced by the S-III genus. However, the PTA project discovered brand new S-II-1 tabs in German stores in 2021 on odd-sized cans of the Danish beer brand 'Faxe'.
– The PTA project has recorded brand new T-IV type ring pulls as street litter in Wageningen in the Netherlands closely resembling the historical European 'T-IV-1 Conradi', which was abandoned *c.* 1990. The first were probably produced by Crown Packaging for the Iranian market. "Investigative embedded dining-research" in the area showed these cans were imported by a local Kebab restaurant. Over time and with some corrosion, these new specimens may interfere with dating late modern contexts accurately. The archaeologist Fred Sutherland reported a similar case when he found recent Chinese ring pulls in a local Asian Convenience Mart in Minneapolis (pers. comm, 2023).

Littering Still Happens!

It is generally assumed today that the introduction of pull tabs after 1962 was a rapid and great success, which led the entire US market and consumers to switch to pull tab cans within just two or three years (e.g. Smith 2003, 341). However, it is interesting that an analysis of pictures of the Woodstock Festival of 1969 show that substantial amounts of cans left as litter at the festival site still had the triangular holes indicative of churchkeys (Figure 8). This shows that tear strip opening devices were not adopted fully by the public as late as the end of the 1960s, and although pictures only show one side of a can, it is reasonable to assume there were still non-tab cans on the market (see also Maxwell 1993, 300, fig. 18).

One common misconception which can be found in industry literature is that the statab as of 1975 had mitigated the problem of pull tab litter completely (Zwaal 1993, 370). The PTA project shows that this is an overestimation at best. Of the 1735 pull tabs sent in Batch No. 200 by metal detectorist Alex Josemanders, 1606 (93%) were statabs (Figure 9). The pull tabs were counted and classified with the help of archaeology students from Saxion Applied University (Figure 10). Josemanders goes out detecting frequently, often two or three times a week, and finds similar numbers of statabs every so many months within a 60 km "scooter range" from his home. The cultural practice of wiggling tabs from a can when people are hanging out is gravely underestimated by the industry. This proposition is also confirmed by data from the Dutch anti-littering activist Dirk Groot, known as Zwerfinator (pers. comm. 2021, see also his website[14]). In 2023 a refund policy on beverage cans was introduced in the Netherlands, and it will be interesting to see if this will affect the number of tabs left as litter.

14. www.zwerfinator.nl

FIGURE 8. Part of a picture from the Woodstock Festival 1969, showing a beer can (lower right corner) opened with a churchkey (photographed by Ted Saunders, from the collection at the Bethel Woods Museum, https://www.bethelwoodscenter.org/museum).

FIGURE 9. Metal detectorist Alex finds thousands of pull tabs each year; most of these are statabs, which according to the beverage can industry are not discarded as litter (picture by Jobbe Wijnen).

Journal of Contemporary Archaeology 10.2 (2023) 258–290
ISSN (print) 2051-3429 (online) 2051-3437 https://doi.org/10.1558/jca.25283

FIGURE 10. Students from Saxion Applied University spent an entire afternoon counting and organizing the pull tabs in Batch No. 200, sent by Josemanders.

Vignette 5: Liz's Litter Pictures

One of the pictures by Liz Betts (courtesy of Liz Betts, 2022)

Liz Betts (41) from Campbell's Creek in Victoria, Australia, takes pictures of street-found litter: "It's a strange hobby", she explained. "I live in a country area that was mined extensively for gold in the nineteenth century. Dumping rubbish in old mineshafts or out in the forests was commonplace then and sadly still is. Some of my favourite things to photograph are the old cans with the pull tabs, as I really like the teardrop shape they leave in the top of the can. I came across your website when I was doing a little bit of research on dating these cans. What I do with the photos? Well, I don't usually do anything with them, other than sometimes I use them as inspiration for creative writing. I love the stories that these finds tell us!" (Batch No. 654)

Pull Tab Archaeology in a Bigger Frame

One question raised – also in peer review – was how the PTA project can be contextualized within archaeology. This is a point that was deliberately not addressed during the project itself, to keep the flow of research directions as open as possible. I like to remain mindful about framing, as one of the thoughts underlying the project is that archaeological work like this can be made relevant to prevailing social or academic needs at hand. To explain: PTA can just as much be conceived as serving the serious purpose of forensic science when a beer can is found on a crime site, as it can be a critique of CRM or a playful Sunday afternoon educational project for children. During its course, the project raised questions which connect with environmentalism. This in turn makes it natural to frame pull tab archaeology along the same lines as other studies on consumer cultures (Mullins 2011), or concerned with waste, such as Rathje's garbology (Rathje and Murphy 2001), or with a specific kind of object as litter. An example of the last category is the Lego Lost at Sea study by Tracy Williams and derivative works (Williams 2022; see also Turner *et al.* 2020). Williams engages with the urgent wider issue of plastic pollution through the lens of a one-time event in 1997 in which the cargo ship Tokyo Express lost a container with 4.8 million pieces of Lego, which keep washing ashore on the coast of Cornwall in the UK even today. Once one starts noticing plastic waste on the beach, one can no longer "un-notice" it, and this awareness effect with one type of artefact as a starting point is what the PTA project aimed for too.

Questions about what constitutes heritage and how this informs the future have been prominent from the start in PTA. This touches on one of the project's incentives, which was when pull tabs were deselected in CRM without clear reasoning. I argue that this lack of explanation relates to a deeper issue in Dutch archaeology with how it frames – or doesn't frame – its responsibility towards the future. Here the PTA project resonates with the recently completed Heritage Futures project, which "set out to explore how heritage practices, broadly defined, contribute to the making of future worlds" (Harrison *et al.* 2020). The PTA project relates to the comparison this work makes between the treatment of heritage and waste and the challenges of what should be selected for preservation in a world suffering from a profusion of (potential) heritage. That "what is kept is not necessarily what is actively selected but can simply be what remains, what is not disposed of", is one of the many interesting findings (Harrison *et al*. 2020, 241). As said, there are reasons to believe pull tabs will still be around long after humanity has disappeared from the planet. Heritage Futures alike, PTA questions the perception of heritage, like tropes of vulnerability and scarceness – neither of which apply to pull tabs at all. However, the main body of this section focuses on a different and perhaps more positive value of archaeological practice: the power of doing things yourself.

The Privileged Archaeological Experience

The citizen science of Pull Tab Archaeology aimed further than an attempt to persuade citizens to gather archaeological data for scientists. It tried actively to engage people to handle archaeological materials themselves, in this way emancipating the archeological experience and liberating it from the restrictions CRM placed on it. Archaeology =

handling the materials. In this section I argue that the beneficial effects of *archaeological experiences* are vital and are needed if archaeologists want to stay relevant in the twenty-first century.

It is generally recognized in the Netherlands that CRM policy has had a detrimental effect on the accessibility of archaeological practice with the public since the 1990s (Duineveld 2006; Van de Rijdt 2015; Knoop *et al.* 2021; Van Londen *et al.* 2021). The archaeological experience has become an exclusive experience: handling materials and excavation are restricted to those who have an academic degree and a work permit. Although lay-archaeological excavation remains formally possible through a legal exception for associations with an archaeological purpose (Rijksoverheid 2016, Article 2.3), this is limited to declassified archaeological sites only and has not led to increased public involvement. In general, people consume archaeology passively in the form of exhibited artefacts and published stories, documentaries and smartphone applications.

Studies have concluded that there is a growing desire to redesign CRM policy in the Netherlands (Van den Dries 2014), and there are several indications that a shift in perspective seems to be at hand. First, the Dutch Council for Culture recently advised the government to invest more in public outreach in archaeology (Raad voor Cultuur 2022), to which Secretary of State Gunay Uslu responded that this advice did not go far enough with respect to accessibility (Uslu 2022). Second, the Dutch Cultural Heritage Agency has conducted a reconnaissance into the implementation of the European Convention on the Value of Cultural Heritage, known as the Faro Convention (Council of Europe 2005; Linssen and Faro Team RCE 2022), which will lead to governmental approval of the treaty. The agency supports pilot projects that are designed around community archaeology and participation. A study by Van Londen *et al.* (2021) listed the PTA project as one of 55 archeological projects in the Netherlands with a more Faro-like participative outlook.

Although there is a place and need for experts, it is the proposition of PTA that this should not prevent people from having access to experiencing archaeology *hands on and in their own way.* The PTA project counters the idea of monopolized knowledge production and unidirectional disclosure of results, as is common in CRM. It does this by making the "doing of archaeology" in PTA of equal, if not greater, importance as the results in produced data, knowledge, stories, exhibitions or professional artwork. Pull tab archaeology attempts to bring autonomy back to the public by inspiring people to start their own practice, have fun and draw their own conclusions, despite what experts may think. This connects with notions of craft and DIY culture.

Pull Tab Archaeology as a Craft

The meaning of archaeology as craft was first proposed by Shanks and McGuire (1996), as an attempt to break down the perceived split between thinking and doing, interpretation and excavation, and mind and body, and to point out the significance of wisdom, a social dimension, aesthetics, expression and creativity in archaeological practice. Their article was written against the backdrop of polemics between processualists and postprocessualists of the 1980s and 1990s and proposes notions of craft as a remedy.

Although the authors write that archaeology can address cultural needs and create "diverse archaeological products" (Shanks and McGuire 1996, 83), their main case remains within the boundaries of *academic* knowledge production, in which public and expert retain their traditional roles. The PTA project invokes a more profound breakdown of these roles in cultural production. It was another notion of craft and creativity that fitted the project better, especially as regards its connection with DIY culture.

This notion of craft is elaborated by David Gauntlett in his monograph *Making is Connecting: The Social Power of Creativity, from Craft and Knitting to Digital Everything* (Gauntlett 2018). For Gauntlett, making and thinking are two halves of a whole which cannot be separated (Gauntlett 2018, 31). Drawing on the nineteenth-century philosophers John Ruskin and William Morris and on twentieth-century scholars on craftsmanship such as Peter Sennett (2009), Gauntlett explains how a creative process consists of alternating and simultaneous movement between thinking and doing:

> The craftsman/woman does not do the thinking and then moves to the mechanical act of doing: on the contrary, making is part of thinking […] and feeling; and thinking and feeling are part of making. (Gauntlett 2018, 31)

For Gauntlett (2018, 32) the essential elements of relevant craft are:

1. the inherent satisfaction, or joy of making;
2. a sense of being alive within the process; and
3. engagement with ideas, learning and knowledge that do not come before or after, but from *within* the process.

For many, if not all, archaeologists, these tropes may sound familiar. As archaeologists we know that our understanding of our particular topic grows from working intensively with the materials. Many will also recognize the instant and bodily joy that may arise when our shovels open up the soil on the first day of a dig, or when we open up our boxes to study the materials we love the most. Some archaeologists feel alive when those boxes are filled with *silex*; for others it is pollen samples, or pull tabs for that matter. We know that learning occurs, and eventually wisdom develops, from working with materials and data over longer periods of time, with a continuous exchange between thinking and doing. The importance of the body in this exchange cannot be overemphasized. We know that joy, a sense of being alive, makes us persist when the work is tedious. Gauntlett's description of creativity is how archaeologists have always worked, and these elements apply equally to participants in the PTA project. This is illustrated in this article with the experiences of participants given in the vignettes inset throughout this article. The "Joy of Making" can be found with people who sent artwork to the project, for example Kerry Griechen with his pull tab lamp (Vignette 2) and the De Kluizenaar family with their map (Vignette 3). 'A sense of being alive' is present with the Nelson kids, determined to become pull tab archaeologists (Vignette 1). Former environmentalist radio producer Joost Huijsing stated after sending 10 shipments and 40 batches that he was "addicted to the PTA project" and that he simply didn't know how to quit. These are just a few examples of how every participant had her or his personal and often creative experience.

Most archaeologists cherish an academic outlook in their profession, which commonly assumes that archaeological production only occurs at the top level, that of the absolute nova: knowledge that was unknown to humanity before. CRM policy prevents public archaeological experiences mainly through the argument that it might damage future knowledge production, which ignores that the importance of archaeological knowledge in the future is an assumption (see also De Raad 2020) and that knowledge and cultural production are relevant at all levels of society.

Social Capital and the Need for DIY thinking

Gauntlett also explains the beneficial connection of craft to community and social capital. Craft, in the form of daily creativity in things like knitting, woodworking, painting, making music or html-website coding, enhances general wellbeing and trust within society. Craft is a form of connecting with other people, society and the environment, and with that is both a political activity as well as a remedy for alienation from, and polarization within, society (Gauntlett 2018, 143–145). The connection Gauntlett makes to DIY culture is in this sense vital. DIY culture arose in the 1960s as a part of the political counterculture and youth movement and continued in the 1980s within punk culture. Gauntlett explains that

> the central idea at the heart of [DIY] culture is a rejection of the idea that you overcome problems by paying somebody else to provide a solution. We've got used to experts, professionals and businesses telling us that the way to do things – whether building a shed, learning about a subject or getting entertainment – is to pay other people who know what they are doing, to do the task for us, because we couldn't really manage it ourselves. DIY culture says that's rubbish: you can do it yourself, and you can do it with more creativity, character and relevance than if you got a 'generic' expert solution. And more important, it feels good to do it yourself.
>
> (Gauntlett 2018, 67)

Although the DIY movement of the 1960s transformed to a more suburban home-improvement perspective over the years, its activist roots got a vivid revival in the early 2000s with the rise of internet culture and social media. Messaging boards, internet fora and self-made HTML coded websites – like the one created by Wilhelm Bos – communicated to the world that there is no need for a publisher to accept your book draft, you can just go online and publish, connect and learn from the experience. The result was a tremendous liberation and creative empowerment.

Punk Archaeology

The project's relation to DIY culture means that punk archaeology should also be taken into account. The name itself was coined by Kostis Kourelis, Bill Caraher and Andrew Reinhard in a dedicated conference in 2013 under the same name. Attuned to the unruliness of punk culture, Caraher admitted having trouble in defining it, but he provided a general description which included, among other aspects, an embrace of destruction as a creative process and a celebration of particular things that can be grouped under the

blanket heading of "DIY practices": various low-fi podcasts; in-field improvised devices; and serendipitous inventions that allow archaeologists to document space, place and the past (Caraher *et al.* 2014, 101). The concept was critiqued for being undertheorized and an unnuanced opposition to all that was also happening in mainstream archaeology (e.g. Mullins 2015). In 2019 Caraher elaborated punk archaeology (and "slow archaeology") more profoundly as a critique of the logic of capital, efficiency and modernity in archaeology. The PTA project can relate to these notions, and it seems fitting and in a way honorable if peers frame PTA as part of this movement. However, it is currently unclear to me if punk archaeologists have taken their notion of DIY outside the academy and into the public. And does punk archaeology also allow participants to "screw up" a dig, as DIY practitioners do as a part of learning? These thoughts are important because in the end PTA is – at least I hope – not so much interested in critique – although this certainly was how the project started – but in the autonomy and agency of participants in creating their own archaeologies. Conventional archaeology will remain important, it just needs to make space for other archaeologies and other people.

Pull Tab Archaeology Experiences

In all, the PTA project reached out to over a hundred people who all made a connection in one way or another to the project's aims. Most of these people sent pull tabs, and thus had their own – modest or more elaborate – archaeological experiences and additional social capital. Some sent entire collections, or artwork made of pull tabs which they had possessed most of their lives, and shared stories of how these artefacts connected them to memories of their youth. One of the most amazing examples is the pull tab lamp sent by Kerry Griechen (Vignette 2). Numerous are the short stories participants told about how PTA helped them look at their environment or at pull tabs with new eyes. People also expressed surprise about there being so many types in existence. Some spoke about their experiences of micro-history – how they would fantasize about the original event in which a tab was used and littered – which resembles Huizinga's notion of the "historical experience" (Koops 2023) and which I am tempted to refer to as (near) spiritual experiences. As pull tab archaeologist Evan said:

> In washed out areas in parks, I can just pick them up by the hundreds. [These pull tabs] came to me through an entire chain of people who had them before me. […] I can image other people exactly on that spot where I was, having a good time with their friends, imagining the life of this tiny object […] and then then it's a similar story for each one that I pick up. That's amazing.
>
> (Jaworkski, in Wijnen and Jaworkski 2021)

Alex Morton from Indianapolis was inspired by the project to start organizing his own collection and to create a YouTube channel called "Sta-Rad Tabs". In 2023 he made his first pull tab dedicated conference visit. When the American archaeologist William Schroeder heard from the project, he took a plane from Washington State and visited me across the Atlantic Ocean in the Netherlands: a heartwarming experience and proof

of the power of archaeological passion and connection. There are many more examples: PTA invites people to connect on many different levels. There somehow is something evocative about the pull tab, or the personal stories connected to them, that made the project work. As one reviewer of this article suggested: "Why not cigarette ends?" Indeed, why not?… But in a way this question appears rhetorical: "Because it wouldn't have worked." Although uncommon in science, there is something appealing to me in not trying to answer *why*, as if scientific dissection will devalue the very connections and experiences the PTA project tries to induce. In a metaphor, the best archaeology is perhaps the archaeology we never excavated.

Professional archaeologists – my peers – connected to the project from quite juxtaposed positions. One Dutch archaeologist expressed deep worry that the PTA project would harm the reputation of *more serious, real archaeology* (anonymous, pers. comm. 2018). PTA to him was therefore "unserious, unreal archaeology" and thus a threat. The contrast could not be larger when I got an e-mail from an infuriated Australian archaeologist, accusing the project of illegal heritage trafficking and disrespecting the profession in general. For him pull tabs *were heritage*, and thus –the PTA project – again – a threat. These responses reaffirm how politically contextualized archaeology is and how PTA challenges the perceived status quo.

A Remedy for Solastalgia

My proposition is that notions of craft are going to be important in the twenty-first century. On a broad scale we live in times where humanity is facing incredible challenges with climate change, strong polarization in society, distrust in politics, a pandemic and a general sense of disconnectedness to our environment. The last is more and more seen as intrinsic to modernity itself. In his book *The Nutmeg's Curse*, Amitav Ghosh (2021) describes how modern ideology, closely related to (narrower) scientific ideology, creates a world of disconnectedness and alienation in which we – after depriving many peoples in (former) imperial colonies from their cultural ancestral roots – now too have become the victims. Glenn Albrecht describes a similar disconnectedness when writing about "solastalgia", the existential distress caused by the lived experience of negatively perceived environmental change (Albrecht 2019). As a remedy both Ghosh and Albrecht urge a reconnection with ourselves and our environment, which I perceive as similar in many ways to the connection Gauntlett refers to in *Making is Connecting*.

It is my belief that the twenty-first century is not greatly in need of more archaeological knowledge in the creation of cultural histories (see also Pétursdóttir 2020). What is more important in our times is the potential of archaeology to create meaningful and healthy relationships with ourselves, others and our environment. As explained in the introduction, the PTA project began with the idea of "starting first and reflecting later". This article is that reflection, and looking over my shoulder the attempt to develop healthy relationships through archaeology was definitely at the core of what we apparently did.

Vignette 5: Pull Tabs as a Metaphor

Pull Tab archaeologist Ivar Schute at Notre Dame, Paris, January 2019 (photograph by Michaela Prinzinger).

Inspired by the phrase "Pull Tabs can be found everywhere" colleague-archaeologists would often send me pull tabs from more historical heritage sites. James Flexner sent tabs from an historic site in Triabunna (Tasmania) and Attila Deszi lent us ring pulls from the 1980s historical nuclear storage protest camp *Republik Freies Wendland* in Gorleben, Germany (publication in preparation) – which were faithfully returned in accordance with German law. Martijn Reinders made it a sport to send pull tabs specifically from World War II German *Luftwaffe* sites and Ivar Schute from the Notre Dame in Paris (see picture), from the disputed Cyprus–Turkey border and from the prehistoric megalithic memorial site at Carnac (France)… to which I responded with tabs from Celtic Bibracte (France) and one found on the spot where Adolf Hitler stood when he made his speeches at the Führers Rostrum in Nuremberg in the 1930s. Often, the tabs are there as a result of tourists visiting the historic site, which persuades me to see pull tabs as metaphorical "keys" that open gateways of experience of other moments in time and space. Pull tabs can also create gateways to artistic expression: Los Angeles artist Clare Graham emailed pictures of artwork made of thousands of pull tabs (see her website *Art made from Pop Tops**) and archaeologist Paul Graves-Brown composed and performed a dedicated "Pull Tab Archaeology" song for our project.

* https://claregraham.com/pagesART/pagesPOPTOPS/artPOPTOPS100.html.

Conclusion

The PTA project explored many lines, which make it hard to summarize. This persuades me to conclude with what appears to me to be the most important. As I hope to have demonstrated with the massive variation in participants brought together, PTA can be a tool for historical archaeology. The project has also explored how social media and the internet can be put to work in citizen science in a way more hands-on than having people go through digital datasets, and therefore is an example of working with public engagement in archaeology. But in the end, and overall, PTA for me is about the future. As a craft related to DIY practice, PTA is a tool that actively works with hope and well-being in society. The effect of collecting and handling, recording, dating and archiving these evocative little objects called pull tabs, and with that developing personal awareness of and caring for the environment and other people, may seem a small effect, but it does work on a larger scale by creating social engagement and capital. The massive problems of our world today have left a part of the global population in a state of alienation and solastalgia due to overwhelming issues like climate change, ecological degradation, social polarization and wars in Ukraine and Israel/Palestine. To cite Thora Pétursdóttir, I think that the future of archaeology is not served by only furthering its traditional retrospective and culture-historical approach; it also needs to be hopeful in its critique and should be "prospective rather than retrospective and define the future not merely with reference to the past, or in terms of vulnerability and loss, but also in terms of possibilities of survival and becoming"(Pétursdóttir 2020). It is my proposition that the underlying elements of pull tab archaeology can bring new heart and purpose to the practice of archaeology and help develop its role in society towards an archaeology as a work that reconnects – to borrow a line from ecophilosopher Joanna Macy (Macy and Young Brown 2014). I like to think archaeology relates to our fundamental desire to be human, to make life a joyful experience to connect to the world and to share this experience with others. I imagine this to be at the center of our effort, as if to say: "Hey, we're all just people here! Want to be an archaeologist? Then pick up a trowel and start connecting today! You will bring goodness to the world with every scoop you take."

Acknowledgements

Big thanks go out to the hundred pull tab archaeologists who sent pull tabs from across the globe. Also thanks to Tonnie Wijnen, for making the pictures for the typology, to archaeologists Marjolijn Kok, for creating the database, and Ivar Schute, without whom this journey would have never begun. Also thanks to the CHAT Conference Standing Committee who supported the project from the start (www.chat-arch.org). Special thanks go to the Patreon supporters at www.patreon.com/pulltabs who help keep the website alive, to Dirk Groot for his Zwerfinator data (https://zwerfinator.nl/), to Wilhelm Bos for the "Blue Pictures", to Wout Arentzen and to Charel van Deursen, Petra Rietberg – who reviewed the first draft – and "brother in pull tabs" William Schroeder for his help and support.

References

Albrecht, G. A. 2019. *Earth Emotions: New Words for a New World.* Ithaca, NY: Cornell University Press. https://doi.org/10.7591/cornell/9781501715228.001.0001

Arentzen, W. 2022. *Treklipjes*. Unpublished manuscript.

Associated Press. 2018. "Archaeologists Dig Site of Woodstock Concert." Video uploaded to Associated Press YouTube channel, 21 June. Online: https://www.youtube.com/watch?v=GMja9c2CCQ

Barraclough, T. G. 2019. *The Evolutionary Biology of Species*. Oxford: Oxford University Press. https://doi.org/10.1093/oso/9780198749745.001.0001

Caraher, W. 2019. "Slow Archaeology, Punk Archaeology, and the 'Archaeology of Care'." *European Journal of Archaeology* 22 (3): 372–385.

____., K. Kourelis and A. Reinhard, eds. 2014. *Punk Archaeology*. [Grand Forks:] The Digital Press at The University of North Dakota. https://doi.org/10.31356/dpb007

Council of Europe. 2005. "Convention on the Value of Cultural Heritage for Society." Online: https://www.coe.int/en/web/culture-and-heritage/faro-convention

De Raad, J. 2020. "Voor altijd onder de grond. Bescherm archeologie ook door opgraven." *Erfgoed Magazine* 2020 (5): 16–19.

Duineveld, M. 2006. *Van oude dingen, de mensen, die voorbij gaan… : over de voorwaarden meer recht te kunnen doen aan de door burgers gewaardeerde cultuurhistories*. Wageningen: Wageningen Universiteit.

Facebook. 2018. "Facebook Reports Third Quarter 2018 Results." Online: https://s21.q4cdn.com/399680738/files/doc_financials/2018/Q3/Q3-2018-Earnings-Press-Release.pdf

Gauntlett, D. 2018. *Making is Connecting: The Social Power of Creativity, from Craft and Knitting to Digital Everything* (2nd edition). Chichester, UK: John Wiley & Sons.

Ghosh, A. 2021. *The Nutmeg's Curse: Parables for a Planet in Crisis*: Chicago: University of Chicago Press. https://doi.org/10.7208/chicago/9780226815466.001.0001

Gitlitz, J. 2013. *Bottled Up: Beverage Container Recycling Stagnates (2000-2010)*. Culver City, CA: Container Recycling Institute. Online: https://www.container-recycling.org/images/stories/PDF/BottledUp-BCR2000-2010.pdf

Harrison, R., C. DeSilvey, C. Holtorf, S. Macdonald, N. Bartolini, E. Breithoff, H. Fredheim, A. Lyons, S. May and J. Morgan. 2020. *Heritage Futures: Comparative Approaches to Natural and Cultural Heritage Practices*. London: UCL Press. https://doi.org/10.2307/j.ctv13xps9m

Johnson, M. 2019. *Archaeological Theory: An Introduction*. Chichester, UK: John Wiley & Sons.

Knoop, R., H. van Londen, M. M. van den Dries and S. Landskroon. 2021. *Brave New Worlds: Foreign Inspirations for Dutch Archaeological Heritage Management*. Amsterdam: Gordion.

Koops, E. 2023. "Johan Huizinga (1872-1945) – Nederlandse cultuurhistoricus: 'Aanklager van zijn tijd'." *Historiek*, 3 March. Online: https://historiek.net/johan-huizinga-cultuurhistoricus/65083/

Lambers, K., W. B. Verschoof-van der Vaart and Q. P. J. Bourgeois. 2019. "Integrating Remote Sensing, Machine Learning, and Citizen Science in Dutch Archaeological Prospection." *Remote Sensing* 11 (7): Article 794. https://doi.org/10.3390/rs11070794

Leigh Hester, J. 2020. "The Archaeology of Those Weird Metal Things That Open Your Soda Can." *Atlas Obsura*, 17 March. Online: https://www.atlasobscura.com/articles/archaeology-of-cans

Linssen, M. and Faro Team RCE. 2022. *Onderweg naar Faro. De betekenis van het Verdrag van Faro voor het Nederlandse erfgoedveld en een vertaling in ambities* [Route to Faro: The Significance of the Faro Treaty for the Dutch Heritage Sector and a Translation into Ambitions]. Uitvoeringsagenda Faro – deel 1. Amersfoort: Rijksdienst voor het Cultureel Erfgoed.

Macy, J. and M. Young Brown. 2014. *Coming Back to Life: The Updated Guide to the Work That Reconnects*: Gabriola Island, BC, Canada: New Society Publishers.

Maxwell, D. B. S. 1993. "Beer Cans: A Guide for the Archaeologist." *Historical Archaeology* 27 (1): 95–113. https://doi.org/10.1007/BF03373561

McAtackney, L. 2020. "Contemporary Archaeology." In *The Routledge Handbook of Global Historical Archaeology*, 215–230. London: Routledge. https://doi.org/10.4324/9781315202846-12

Mullins, P. R. 2011. "The Archaeology of Consumption." *Annual Review of Anthropology* 40: 133–144. https://doi.org/10.1146/annurev-anthro-081309-145746

____. 2015. "Punk Archaeology and the Mainstream." *Archaeology and Material Culture* [blog], 19 January. Online: https://paulmullins.wordpress.com/2015/01/19/punk-archaeology-and-the-mainstream/

Omroep MAX. 2020. "De archeoloog en het treklipje." Audio segment, *Nieuwsweekend*, 12 December. Online: https://www.nporadio1.nl/fragmenten/nieuwsweekend/c83043c5-2fd4-439b-b18c-ffd513587ebb/2020-12-12-de-archeoloog-en-het-treklipje

Pétursdóttir, Þ. 2020. "Anticipated Futures? Knowing the Heritage of Drift Matter." *International Journal of*

Heritage Studies 26 (1): 87–103. https://doi.org/10.1080/13527258.2019.1620835
Raad voor Cultuur. 2022. *Archeologie bij de tijd. Aanbevelingen voor aanpassingen*. [Archaeology for Today: Recomendations for Adaptations]. Den Haag: Raad voor Cultuur. Online: https://open.overheid.nl/documenten/ronl-3d178848459b7fffb5e8f39fcae288fe349f7075/pdf
Rathje, W. and C. Murphy. 2001. *Rubbish! The Archaeology of Garbage*. Tuscon: University of Arizona Press.
Rijksoverheid. 2016. "Besluit Erfgoedwet Archeologie (Staatsblad)." *Staatsblad van het Koninkrijk der Nederlanden* 155. Online: https://www.cultureelerfgoed.nl/publicaties/publicaties/2016/01/01/besluit-erfgoedwet-archeologie
Rock, J. T. 1984. "Cans in the Countryside." *Historical Archaeology* 18 (2): 97–111. https://doi.org/10.1007/BF03374488
Schroeder, W. D. 2017. "A Clino-Cladistic Look at Pull & Push Tabs ca. 1950-1980." Online: https://scholarworks.umt.edu/gsrc/2017/posters/8/
Sennett, R. 2009. *The Craftsman*. New York: New Haven, CT: Yale University Press.
Shanks, M. and R. H. McGuire. 1996. "The Craft of Archaeology." *American Antiquity* 61 (1): 75–88. https://doi.org/10.1017/S0002731600050046
Shanks, M. and C. Tilley. 1992. *Re-Constructing Archaeology: Theory and Practice* (2nd edition). New York: Routledge.
Sheller, M. 2014. *Aluminum Dreams: The Making of Light Modernity*. Cambridge MA: MIT Press. https://doi.org/10.7551/mitpress/9626.001.0001
Smith, G. D. 2003. *From Monopoly to Competition: The Transformations of Alcoa, 1888–1986*. New York: Cambridge University Press.
Stichting Erfgoed Nederlandse Biercultuur. 2023. "Blik op Blik – Nederlandse vereniging van bier- en frisdrankblikkenverzamelaars." Nederlandse Biercultuur website. Online: https://www.nederlandsebiercultuur.nl/databank/brouwerij?brouwerij_id=5979
Turner, A., R. Arnold and T. Williams. 2020. "Weathering and Persistence of Plastic in the Marine Environment: Lessons from LEGO." *Environmental Pollution* 262: Article 114299. https://doi.org/10.1016/j.envpol.2020.114299
Uslu, G. 2022. *Kamerbrief met beleidsreactie advies over archeologie bij de tijd.* Den Haag: Ministerie van Onderwijs, Cultuur en Wetenschap.
Van de Rijdt, T., C. Cohen Stuart and I. van Lent. 2015. *De kracht van vrijwilligers. Over een duurzame relatie tussen de gemeente en vrijwilligers in de archeologie*. Amersfoort: Rijksdienst voor het Cultureel Erfgoed.
Van den Dries, M. H. 2014. "Community Archaeology in the Netherlands." *Journal of Community Archaeology & Heritage* 1 (1): 69–88. https://doi.org/10.1179/2051819613Z.0000000008
Van Londen, H., M. Van den Dries and S. Landskroon. 2021. *Over lokalisme, liefdewerk en lonkend perspectief. Verkenning naar participatie en burgerinitiatief in de Nederlandse archeologie*. Amsterdam: University of Amsterdam.
Wijnen, J. A. T. 2018. *"Pull Tab Archaeology of the World!"* Project launch video for the International Centre for Pull Tab Archaeology, Wageningen, uploaded to Jobbe Wijnen YouTube channel: https://www.youtube.com/watch?v=Q8tOrRzjI7s
____. 2020. *Pull Tab Archaeology World Typology vs 2 "Woodstock"*. Wageningen: Wijnen Cultuurhistorisch Onderzoek / Pull Tab Archaeology.
Wijnen, J. A. T. and E. Jaworski. 2021. *Meet Pull Tab Archaeologist Evan Jaworski.* Video interview, International Centre for Pull Tab Archaeology, Wageningen, uploaded to Jobbe Wijnen YouTube channel: https://www.youtube.com/watch?v=1G2Bk8wokVo
Wijnen, J. A. T., I. A. Schute and R. S. Kok. 2016. "Conflict Archaeology in the Netherlands: The Role of Communities in an Emerging Archaeological Discipline." *Journal of Community Archaeology & Heritage* 3 (1): 22–39. https://doi.org/10.1080/20518196.2015.1123889
Williams, T. 2022. *Adrift: The Curious Tale of the Lego Lost at Sea*. London: Unicorn Publishing Group.
Zwaal, P. 1993. *Frisdranken in Nederland. Een twintigste eeuwse produktgeschiedenis*. Rotterdam: Stichting BBM.

Jobbe Wijnen is an independent researcher and heritage consultant. His main research focuses on conflict archaeology, contemporary archaeology and oral histories. He is currently a member of the Standing Committe of the Contemporary and Historical Archaeology in Theory group (CHAT) and of the Archaeologists4Future.nl initiative. In 2018 he was the founder of the Centre for Pull Tab Archaeology. His most treasured archaeological artifact is a 1992 SAAB 900i automobile with 570,000 km on its counter. He lives with his partner and daughter in Wageningen, the Netherlands.