

Pop Music

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“This is NIME’s Corniest Submission ever.”

—Reviewer 2 (we hope)¹

Abstract

This paper presents “Pop Music,” a semi-edible gastroacoustic installation that would be presented at alt.NIME in a hybrid installation/paper presentation. This paper documents the creation of the installation, considers popcorn and corn-related art and music, the uses of corn in NIMEs, and the potential scarceness of that space being addressed by this installation and paper. The mechanics of the installation are presented, along with a discussion of theoretical background and commentary. Users were fed, and user feedback was evaluated. The paper concludes by connecting this seemingly “trivial” installation to the interrelation of play and research, conversations on NIME self-seriousness and aesthetic conformity, the value of interactive installations, the interactivity of valuable installations, questions of edibility and ethical implications in installations, universality of moral codes, government structures and syntactical relations, astronomical quasar deduction, and the profound unseriousness of this work.

Additional Key Words and Phrases: corn

1 Recommended Drink Pairing

This paper pairs well with a classic Corn ‘n’ Oil cocktail (Figure 1):

- 2 ounces blackstrap rum (or aged Barbados rum)
- 1/2 ounce falernum
- 1/2 ounce lime juice, freshly squeezed
- 3 dashes Angostura bitters
- Garnish: lime wedge

2 Introduction

In all the ways that matter, and a few that don’t, this installation was inspired by the work *Vida, Muerte, Resurrección* (Victor Grippo, 1980) at the New York Museum of Modern Art, which features a broken violin filled with corn kernels.⁶ From this static, sculptural piece, we saw the potential to utilize the potential energy of the unpopped kernels to create a dynamic, stochastic, energetic sound-collage. In other words, we wondered what would happen if we put it in the microwave.



Fig. 1. A cold, crisp Corn ‘n’ Oil cocktail, recommended to enhance the experience of reading this paper.

¹Reviewer 2: we will bring you extra popcorn. Please like us :)²

²Please please please please please pleeeeeeaaassssseeeeeee³

³Some would argue that this might be bribery. We argue that bribery is a politically subversive act that is entirely appropriate for alt.NIME.⁴

⁴The authors would like to note that they were delighted to receive an acceptance review that began with the words “This is NIME’s Corniest Submission ever,” but that it was in fact Reviewer 3 that gave us this high praise (high maize?, no that’s not really that funny, we should probably not put it in the paper).⁵

⁵However, Reviewer 1 neglected to submit a review, so really, if you think about it, Reviewer 3 WAS Reviewer 2 THE WHOLE TIME!!!!

⁶<https://www.moma.org/collection/works/106711>, (image 2, far right).

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NIME '26, June 23–26, 2026, London, UK

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The museum staff would not let us do this. Forced to take matters into our own hands, we envisaged our own corn-based instrument that would use popped corn kernels as projectiles to excite the strings of an acoustic instrument. Popcorn can be seen as an approximation of a dirac delta function [cite a quantum mechanics textbook or something], creating an impulse that excites resonant modes of a damped oscillator, and makes some cool sounds. Instead of creating an installation merely including corn and an instrument, we wanted to bring about *Mais als Instrument* (corn-as-instrument), to give voice to corn, to allow corn to speak, and even—potentially—to allow ourselves and others to become one with corn.

3 Background

Corn is uniquely situated as a historical and cultural artifact. It also tastes good.

From a Eurocentric point of view, corn is a culinary novelty, having only been brought to the continent after 1492 when Columbus sailed the ocean blue. However, corn had been cultivated as a dietary staple for thousands of years in the Americas.

The authors, all from the United States but having lived in Europe for varying amounts of time, noticed the comparative lack of corn-based foods in Europe. Author 1 is from Indiana (a state famous for its corn production), Author 2 is from Kansas where corn flows like water, and Author 3 is from New York and has eaten corn before. Given our affinity for corn and our interest in computer music, the lack of corn-based musical instruments presented an opportunity.

In want of corny instruments, we searched the NIME literature to find evidence of corn-based instrumental praxis, which led us to unshuck questions of food in NIMEs, semi-edibility in musical performances, and the idea of *maïs comme instrument* (corn-as-instrument). We present this prior work in Section 3.1, followed by a broader discussion of corn in popular media in Section 3.2. We then corn-based musical instruments in Section 3.3, and conclude with a summary of our findings in Section 3.4.

3.1 It's Dinner ^N7ime! Edibility in the NIME Literature

After a shuckingly thorough review of the NIME literature, we have unearthed the following:

NIME has no papers

that mention raw corn. However, processed derivatives like corn flakes[15] and cornstarch[11] have been employed. This leads to a broader point regarding food in NIME: the lack of edibility or semi-edibility⁷. While there are a multitude of works that refer to the *process* of eating or the *concept* of food, and while the NIME conference itself generally provides food, only one work was found in the body of NIME literature that actually fed the audience or performers [14].

Taking stalk of the literature, food in relation to NIME tends to fall into three categories: referencing (but not engaging in) the physical or cultural act of eating[21][1], food as an incidental occurrence in the research process[2][18], and food-as-instrument[15][11]. Incidentally, both food-as-instrument papers utilize corn byproducts, indicating that corn is a core(n) ingredient in a majority of food-based-NIME literature.

Furthermore, scientific research on the popping of corn kernels likens their trajectory through the air as similar to an acrobat doing a somersault[22], suggesting that popcorn has an innate connection to dancing, and therefore potentially to music as well.

Between these observations and the fact that 58 NIME papers mention “kernel” (with various flavors ranging from convolutional kernels[10] to gaussian kernels[3] to operating system kernels[12]), it is apparent that the intersection of corn, technology, and music is already deeply rooted in the subconscious of the NIME community.

3.2 Corn ^{on} ^{cob} in the Public ~~Sphere~~

As far the authors are aware, corn is a public domain corncept (though most physical corn is private property). It is not surprising, then, that corn has firmly entered the public entertainment sphere. The new Broadway show “Shucked”⁸ is entirely about corn. The musical features raunchy humor, connecting it to another exploration of the sensual and sexual properties of popcorn in the movie *Troll 2*, in which raw corn begins to pop during a particularly “steamy” sex scene.

Corn has captivated the public imagination, with a viral interview on TikTok with #cornkid describing corn as “a big lump with knobs; it has the juice.”⁹ Indeed, #cornkid, indeed it does. This interview has been remixed multiple times into corn-based songs.

⁷By semi-edibility, we mean a portion, but not the whole, of the installation is fully edible, rather than the entirety of the installation being semi-edible. As an example, a synthesizer made from bananas and other non-edible components like batteries and wires would be semi-edible (provided that you are allowed to eat the bananas). However, a synthesizer built out of pots of dirt would not be considered semi-edible even though dirt could technically be considered “somewhat edible.”

⁸<https://shuckedmusical.com/>

⁹<https://www.tiktok.com/@recesstherapy/video/7387062074410601771?lang=en>

However, public fascination with corn-centric electroacoustic composition long predates recent viral trends. The 1969 electronic instrumental song "Popcorn" by Gershon Kingsley (later covered by the band *Hot Butter*) is considered one of the earliest hit electronic pop singles, an early indicator of mass maize appeal and a seminal step towards the contemporary conception of *maíz-como-instrumento* (corn-as-instrument).

The multi-Emmy-Award-winning sci-fi space exploration show *Rick and Morty* investigates a corn-based world (season 2, Ep. 10), in which, after observing strawberries on a cob, flowers on a cob, mountains on a cob, and even atoms on a cob, the controversial protagonist Rick Sanchez fearfully shouts, "EVERYTHING'S ON A COB!! THE WHOLE PLANET'S ON A COB!"[9]

Corn is also important in traditional American folk music. Folks who care whether Jimmy crack corn will know what we are talking about.¹⁰ Similarly, folk art has also been based on corn—for example, a palace made out of corn in South Dakota.¹¹

Corn has long sustained human tummies and spirits and held spiritual and ritual significance in Mesoamerican cultures. Additionally, corn can be distilled into spirits.

3.3 A Cornucopia of Sound: Review of Corn-Based Musical Instruments

Since antiquity, corn has sounded.

While our literature review has centered mainly on modern or technologically innovative approaches to making music with corn (and that one paragraph where we talked about *Rick and Morty*), there are plenty of traditional instruments that use corn. Here we acknowledge these instruments, reflecting the importance of considering old interfaces for musical expression, or the "O" in the NIME[13]. Here, by considering old corn-based musical instruments, we hope to suggest not only the O in NIME, but also the C, the R, and the N.

Maracas are typically filled with beans or seeds[16], but the Fort Wayne Philharmonic suggests making one's own maracas with corn kernels.¹² The cornstalk fiddle is also an important North American folk instrument[20].

The "corn cob organ" is not built using corn, but the piano-roll mechanism resembles a corn cob[24]. In the realm of other corn-adjacent instruments, we investigated the Cornet, but were disappointed to find that the cornet is a kind of trumpet and does not have anything to do with corn.

Finally, KoЯn (the band) deserves brief mention. Surprisingly, as shown in Figure 2, KoЯn never uses the word "corn" in their song lyrics. While the nu-metal band does not constitute corn-based art, the band's name does provide a fertile ground for misunderstanding.

3.4 Summarizing our Findings

In the field of New Interfaces for Musical Expression, upon such fertile ground for misunderstanding, we planted our seed of truth, watered it from the hose of curiosity, fertilized it with the manure of research, and watched as a towering cornstalk of knowledge grew from the Earth (Genesis 1:32).

With this newly acquired knowledge, we were ready to begin designing our installation.

4 Designing the Installation

Our initial design was guided by the research question:

*What if we made an installation with popcorn popping and you could hear the corn kernels popping and also they landed on guitar strings and then something happened with guitar pedals or a computer or something that made interesting sounds but there was still popcorn so people could eat the popcorn and maybe there was butter too?*¹³.

While we initially imagined using a microwave to pop the popcorn, the guitar would not fit inside. A hot pan was cornceived, but that would potentially splash hot oil on the guests and the guitar. Thus, we elected to use an electric air popper, which had a convenient funnel with which to direct the popcorn kernels to the guitar where they could become sound-producing grains. Figure 3 shows the initial design sketch which we envisaged.

¹⁰For those who don't know or don't care, "Jimmy Crack Corn" is a traditional American folk song

¹¹<https://www.travelsouthdakota.com/mitchell/worlds-only-corn-palace>

¹²<https://fwphil.org/wp-content/uploads/FWPhil-Instrument-Playground.pdf>

¹³For more on the butter, see Ethical Standards (Section 9)

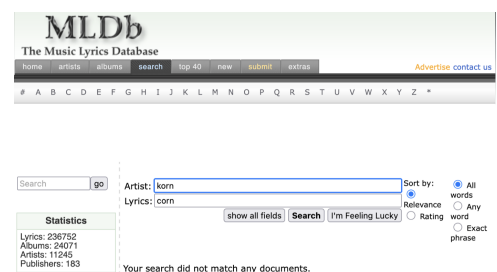


Fig. 2. KoЯn has never directly mentioned corn in any of their songs.

7.7 Reflections on Aesthetics of Popcorn

Normally, popcorn is mindlessly consumed while watching movies in the theater. This installation subverts our normative popcorn consumption habits by making the popcorn into the object of artistic focus. Furthermore, the sound of popcorn rustling and hungry jaws chomping down on that sweet, buttery, fluffy, corny goodness at movie theatres can be heavily distracting. But once again, our installation puts the corn on the big screen. As the corn takes center stage, our installation transforms what was once an object of sonic distraction into an object of sonic abstraction.

This installation was first set up in a lounge preceding the entryway to a concert venue, directly before a concert. It therefore transformed a communal space where people can gather and talk before a concert into a cornmunal space where people can gather and talk before a concert except not as well because they are focused on the popcorn thing and can't hear each other (popcorn machines and electric guitars are pretty loud).

This installation serves as a directed, communal, and edible commentary on what a NIME submission should be. Some would claim that a NIME submission should “be relevant to NIME research” or “contribute new knowledge, insights or perspectives on aesthetics, technology or musicianship” or “be more than just popcorn.”

8 Why?

Good question.

To understand the full journey of how this installation/paper came to be, we must first begin in September 2024. Author 1 had just arrived as a new PhD student in a doctoral computer music program and shared his interest in writing satirical science papers, referencing his beer-reviewed publications in the *Journal of Immaterial Science* with titles like “Schrodinger’s Cat Presumed Dead After 88 Years in Box Without Food or Water”[6] and “Mathematicians Discover There are Only 137 Numbers.”[7] This style of writing unfortunately provided encouragement as Author 2 wrote “ChumP and the Zen of Package Management”[18] a paper contemplating the necessity and banality of writing a package manager for a computer music programming language and what constitutes research in the NIME framework. Additionally, the tone of this paper—which embraces radical honesty, a first-person memoir writing style, and leans into its own silliness and absurdity—was far from a standard academic publication. The acceptance and publication of this paper at NIME 2025 had the unfortunate effect of emboldening Author 1 to go even farther. If “ChuMP and the Zen of Package Management” could package substantive ideas in a manageable paper, what if the substance were removed entirely?

There is a paper infamously known as the “Chicken paper”[25], a satirical publication which repeatedly uses the word “chicken,” and only the word “chicken.” Despite its lexical monotony, the paper creates structure (and perhaps meaning?) via immaculate formatting in the manner of a scientific research article. The “Chicken paper” is essentially a paper-length version of Chomsky’s famous “Colorless green ideas sleep furiously,”[5] which has no clear meaning but gives the impression of making sense through its syntactically logical construction. Inspired by the Chicken paper’s intersection of food with academia, we wanted to write a popcorn paper. We made our popcorn installation, and then on a subsequent hike we decided to spend months of our lives writing a paper about it. In the process, we wrestled with questions of substantiality, occasionally finding ourselves doing actual research and thinking critically about what we are doing, which in a way undermined our profound unseriousness.

8.1 The Serious Part

At this point, Authors 2 and 3 wanted to write a serious reflection while Author 1 strove to maintain a serious commitment to the corn bit, seeking to undercut any efforts towards critical discourse. This friction led to some existential quandaries over both the point of this paper as well as self-reflection over Author 1’s creative tendency to throw a wrench into any observed process that seemed to be moving towards critical thinking.

Author 1 would argue that his writing style is more akin to poetry, as he deliberately obscures points, embraces ambiguity, and focuses on local linguistic explorations over developing overarching narratives. Authors 2 and 3 would argue that, while that may be true, there is really way too much corn stuff and no one wants to read that.

In the dynamic of authorship, we realized that Author 3 is fundamentally after truth, while Author 1 is fundamentally after corn. Author 2 served as a middle ground, striving for truth but also liking the corn stuff. For once in this paper, we (at least Authors 2 and 3) will attempt to be serious.

The authors agree that this paper reads as significantly more focused on inane poetic stylings (i.e. a constant, full-fledged inundation of corn at every turn) than any virtuous effort to make a meaningful contribution to the NIME research community. At the same time, underlying its playful surface simmered a few important points of tension shared amongst the authors in their experiences navigating the discipline of computer music. Notably, there is a distinct tension between flippant alt.NIME (or NIME) submissions like this one and the self-seriousness of the field at large. Does NIME research have to be “serious?” Just as Author 1 was so concerned with the satirical styling of this paper, why are we (NIME-rs) so

concerned about the aesthetic surfaces of our work? Most people who have been to NIME know what the conference “sounds like” and might use words like “experimental,” “avant garde,” or “noisy” to describe much of what is heard in NIME concerts, demos, or installations. After a while, a lot of it can sound the same. Is our music-technological research evaluated by what it tells us about human-computer interaction in a musical context or how well it amplifies the current in-vogue surface level qualities of other NIME works? Returning to this paper, might our popcorn installation fit in at “normal” NIME if we had built our own guitar, added AI, or filled it with dense, noisy harmonies?

Should this paper get rejected (and it probably should), there was still joy in its creation and beauty in the seemingly “wasted” effort. The great majority of NIMEs are demo-ed one time and then sit on the shelf. Is this really a problem? If this popcorn installation has run its course, so be it. What is more important is that it happened and here we are still writing about it. As in a lot of art-making and creative research contexts (like NIME), playful cycles of creative iteration and reflection (like ours) are fundamental to the work. The original presentation of this installation was realized hastily in an afternoon. However, the idea of the installation was conceived a year prior, and the desire to actually do it was expressed regularly. Only when authors 1 and 2 “gave up” on the idea that it had to live up to some broader “research” aim or nebulous standard of quality, they finally got their act together and did something. And, while, on some level, the authors consider the exorbitant amount of time spent crafting this ridiculous paper as “wasted,” they still felt earnestly compelled to write it, sit with the ideas that emerged while writing, think about and rework them right up until the submission deadline, all in the attempt to have the chance present it publicly to NIME community members who may also be navigating similar tensions.

(Authors 2 and 3 will now yield to Author 1.)

9 Ethical Standards

From the onset of our research, we faced a real prisoner’s dilemma:

do we use buttered popcorn, or unbuttered?

We were using a borrowed guitar, so we elected to use unbuttered, unsalted popcorn to cause minimal harm to the guitar upon corn projectile emission. However, this resulted in much of the popcorn being uneaten due to insufficient tastiness and butteriness. To minimize food waste, we needed to maximize popcorn tastiness and thus deduced the need for a post-acoustic popcorn buttering station to improve the gustatory component of the experience while minimizing harm to the guitar.

We plan to incorporate this in the subsequent version of the installation at NIME. The artists plan to bring their own buttering device, but will purchase butter from local vendors to emphasize site-specificity and encourage integration of NIME into the cultural and dairy framework of its location this year.

Other ethical considerations included participant cholesterol levels during the installation experience. We aim to mitigate this by being so popular that our popcorn production could not possibly beat demand, or so unpopular that cholesterol intake will be negligible.

The authors are also aware that AI exists and that it uses a lot of water. Worried that this lack of water might impair corn farming, the authors elected not to use any AI tools in the research or writing process.

We plan to bring our own popcorn and declare it through UK customs. If it is confiscated, we will accept our fate and purchase popcorn from local suppliers. A cursory Google search revealed that London does have stores that sell popcorn [8].

10 Plan and Logistics for Displaying the Installation/Paper at alt.NIME

As detailed in Appendix A, we plan to display the installation alongside the paper at alt.NIME. Copies of the paper will be folded into a cone to serve as a popcorn receptacle, which could also double as fish-n-chips containers, in case other author(s) submit fish-n-chips-based installations.

We would only need a power source and two tables or flat surfaces, one to hold the popcorn machine above the guitar and the other table to support the guitar and computer. The authors will bring all other materials (copies of the paper, tape, air popper, guitar, computer, audio interface, power strip). Ideally, we would be placed right next to a trashcan so that participants can throw away our paper after they finish eating.

11 Proposals for Continued Corn-Based Music

Having demonstrated the importance, or at least existence, of corn-based music, we hope to promote a vibrant community of potential corny musicians in the NIME community. To this end, we propose the creation of a NIME Community Of Researchers Network (NIME-CORN)—a network serving to create a community of researchers in NIME-related fields by fostering community through a network of community and networking. The authors have already developed a Discord

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A Methods 2: Where We Do More Science

“To *b*[utter] or not to *b*[utter], that is the question.”[19]

At the end of the day, the ethical considerations made it clear that “to butter” is indeed the answer. However, this left us with an even more pressing question:

How, exactly, do we butter?

Serving the popcorn with butter presented a challenge, because melted butter is messy. We needed a container to hold the popcorn and contain the butter without leakage. Butter leakage might be a foreign concept to many NIME researchers. As an analogy, consider spectral leakage that occurs in an FFT by applying a windowing function. Now, imagine if instead of spectral energy leaking, it was butter. Gross.

The authors realized that the paper itself could be fashioned into a makeshift popcorn receptacle, and could be taped at the bottom to prevent butter leakage (Figure 9). An experiment was conducted in which popcorn was popped (Figure 10a), the popped popcorn was ladled into our conical manuscript (Figure 10b), 30.6 grams of butter was melted in an 800-watt microwave for 30 seconds (Figure 10c), the melted butter was decanted onto the popcorn (Figure 10d), and another photo was taken (Figure 10e).

A second experiment was carried out to determine the butter retention ability of our corntainer. A glass was placed on a scale and tared to 0g (figure 11a), after which the buttered popcorn was placed on the scale and allowed to sit for 4.55 minutes, so that any butter leaking out of the bottom would collect in the glass (11b). After the time elapsed, the paper was removed and the mass was recorded as still 0g. Within the measurement precision of the digital scale, butter loss was 0.00 +/- 0.01 g (11c). Given that 30.6 g of butter was weighed out, this corresponds to a butter loss percentage (BLP) of only 0.00 +/- 0.04%, indicating Practically Total Butter Retention (PTBR).

Closer inspection revealed butter absorption into the paper’s surface (Figure 12). Because of this, we plan to bring extra copies of our paper in case someone wants to read it, but theirs gets too buttery.



Fig. 9. A butter-containing popcorn receptacle constructed from an academic research paper.

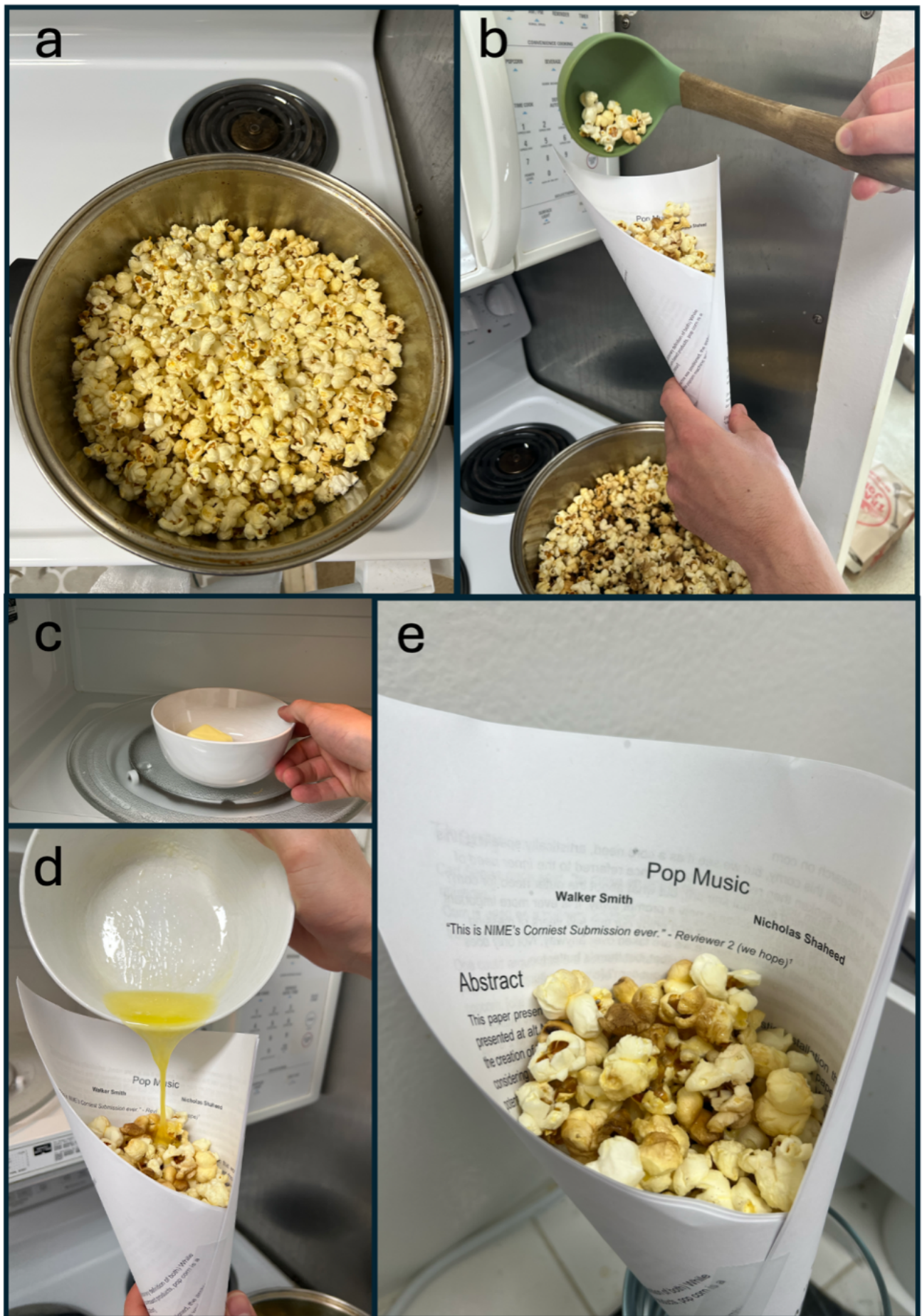


Fig. 10. (a) Popping of popcorn, (b) ladling popcorn into popcorn receptacle, (c) melting 30.6g butter in 800-watt microwave oven for 30 seconds, (d) decanting melted butter onto the popcorn, (e) a close up photo of the buttered popcorn.

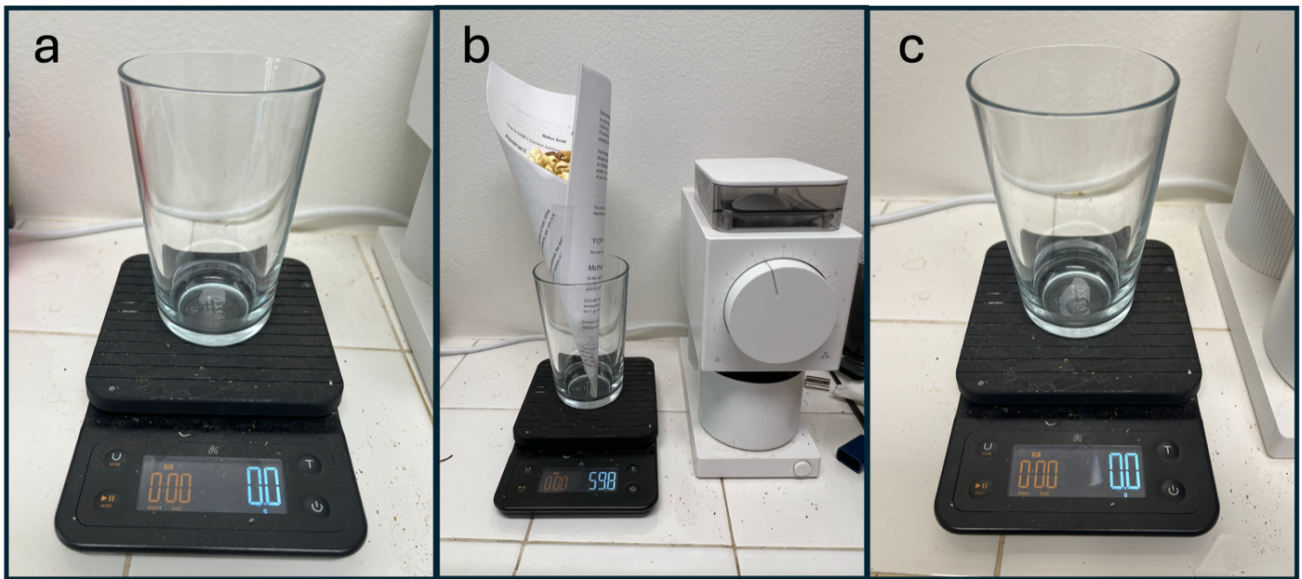


Fig. 11. Before(a), during(b), and after(c), measured butter loss after 4.55 minutes of butter draw-down. Coffee grinder included in (b) for scale.

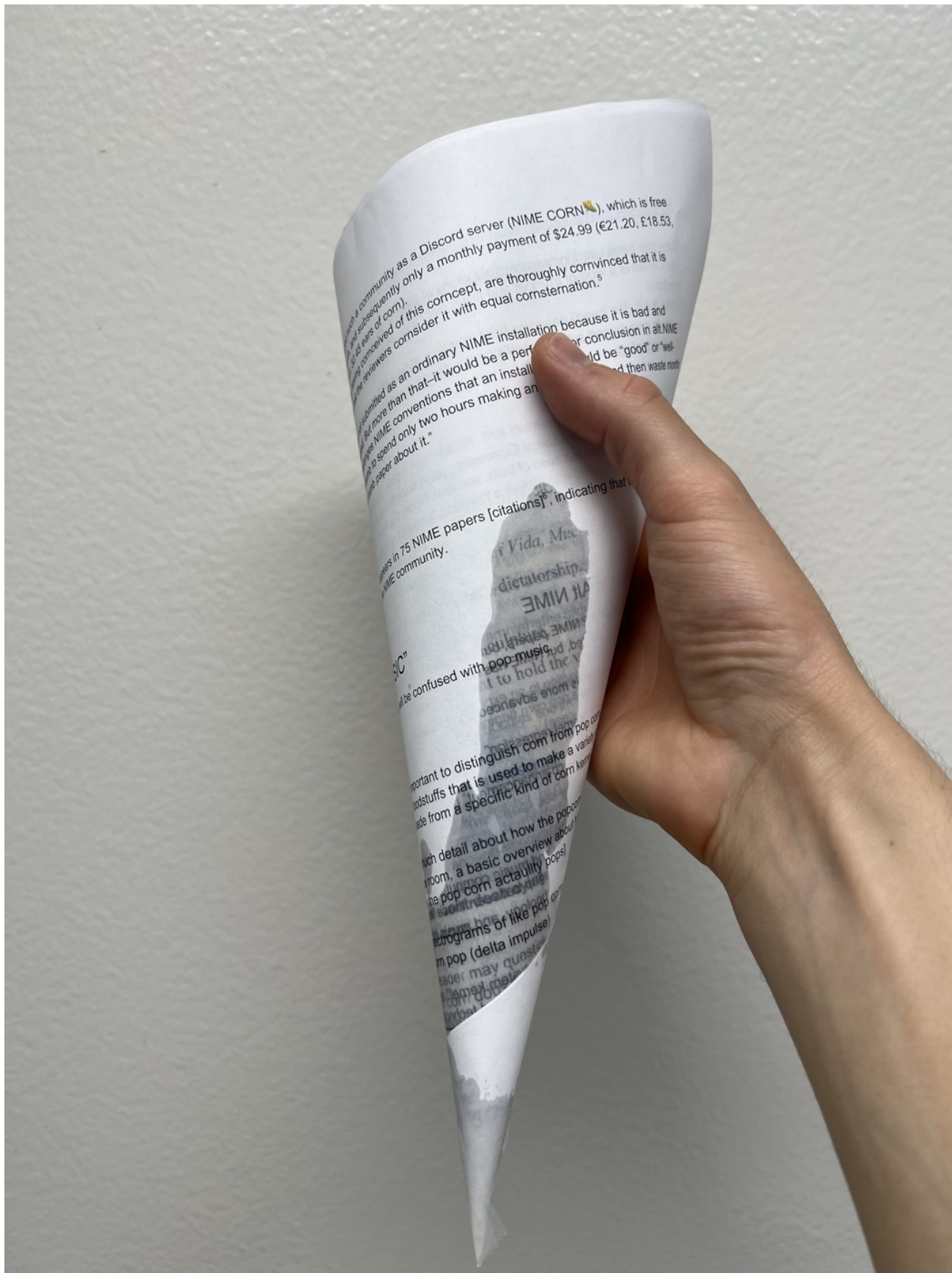


Fig. 12. A buttery popcorn holder.