

**21<sup>ST</sup> CENTURY MAKERS AND MATERIALITIES**

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# Obscura 1C Digital Camera

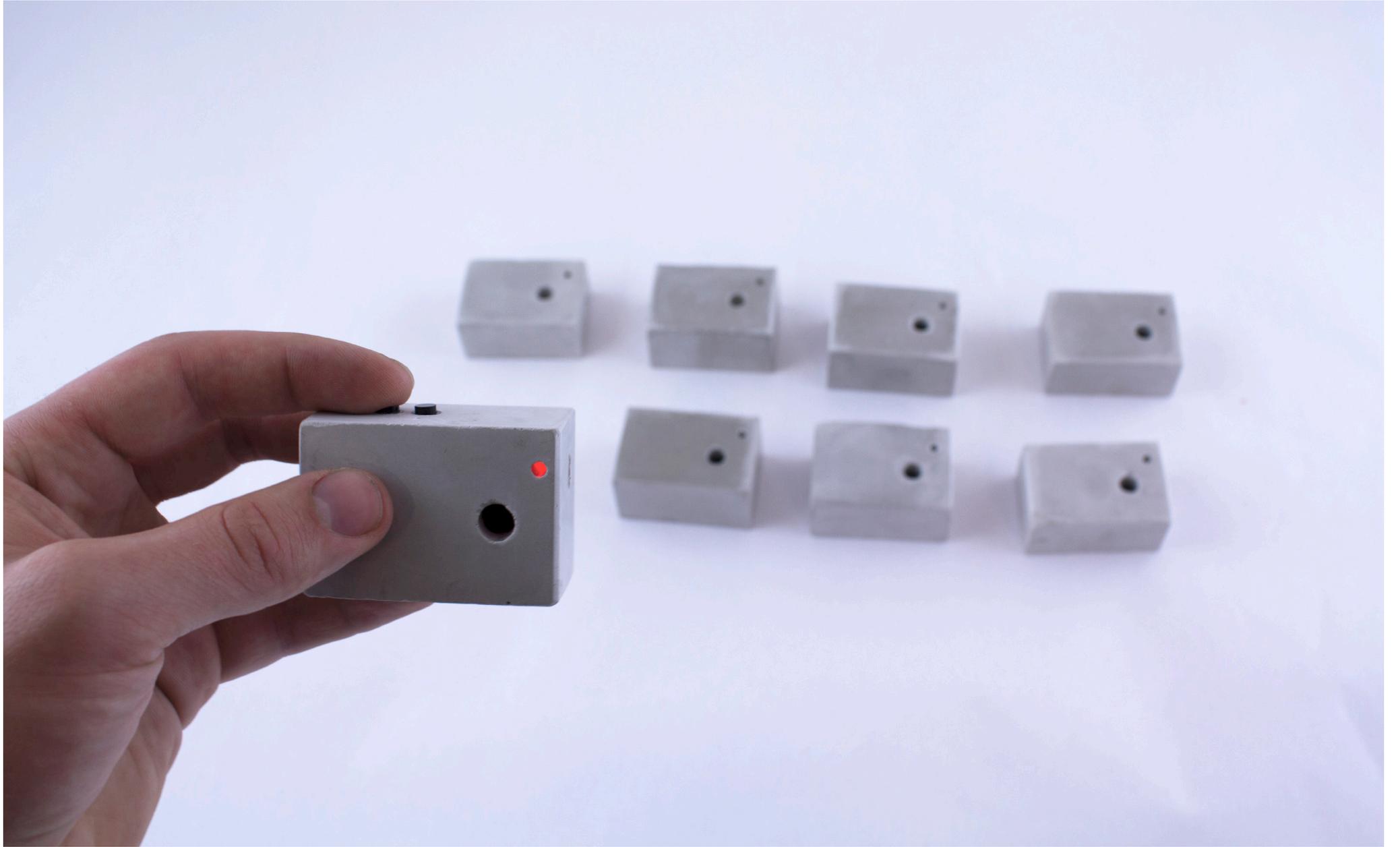
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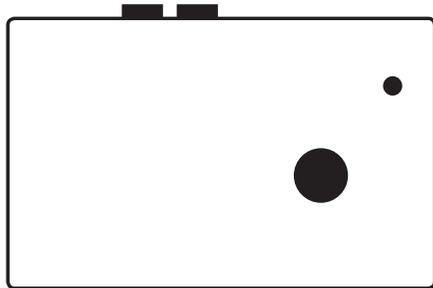
**Abstract:** This document reproduces and further articulates an experimental electronic product and its packaging: The Obscura 1C Digital Camera. The Obscura 1C is part of a larger constellation of devices we have designed with the goal of exploring counterfunctionality. These devices present digital limitation as a positive design offering.

**Keywords:** Interactive design; Human-computer interaction; Conceptual design; Limitations.



Pierce and Paulos | Obscura 1C Digital Camera

# OBSCURA 1C DIGITAL CAMERA



COUNTERFUNCTIONAL DEVICE SERIES

## Preface

This document reproduces and further articulates an experimental electronic product and its packaging: The Obscura 1C Digital Camera. We have written about this work in prior publications (Pierce & Paulos, 2014a; Pierce & Paulos, 2014b; Pierce & Paulos, 2015). Here we emphasize the details of the Obscura 1C as a verbal, visual and physical produced form. We let the Obscura 1C speak largely for itself, as it was designed to do.

The Obscura 1C is part of a larger constellation of devices we have designed with the goal of exploring *counterfunctionality*. The concept of counterfunctionality articulates the idea that new functionality can emerge (often counterintuitively) from directly opposing or inverting ordinary or expected functionality. We have described the concept of a counterfunctional thing as a “thing that exhibits features that counter some of its own ‘essential functionality’ while nonetheless retaining familiarity as ‘essentially that thing’” (Pierce & Paulos, 2014a, p. 375).

Our counterfunctional design process involves first identifying common positive features of a particular technology and then designing around the absence or restriction of these features. With the Obscura 1C, immediate access to digital images and video is the positive features that is identified. A digital camera is then redesigned to inhibit this positive feature by literally encasing the camera and SD card in cement.

When it is framed as a way of approaching the design process, counterfunctionality has similarities with Gaver, Beaver and Benford's strategy to "block expected functionality to comment on familiar products" (Gaver, Beaver and Benford, 2003, p. 239) and Sengers and Gaver's strategy of "stimulating interpretations by blocking expected ones" (Sengers and Gaver, 2006, p. 103).

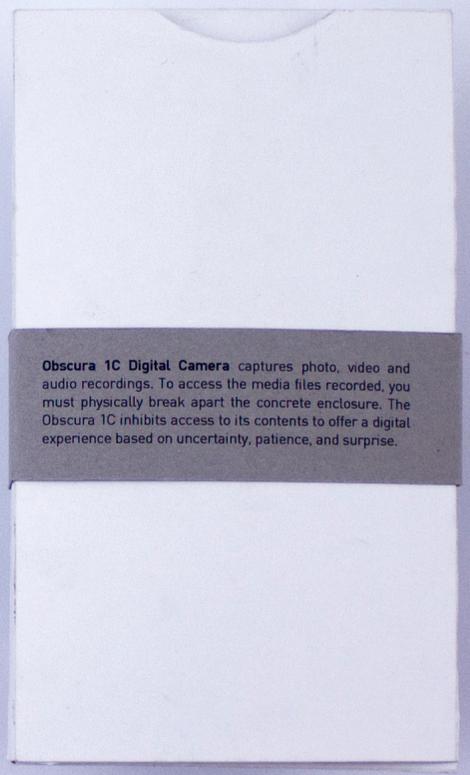
A key difference, however, is that our design work offers counterfunctionality as a salient positive feature of a thing. That is, "limitation" is presented to users as a positive design offering. Another key difference is that the counterfunctional things we design function in part to draw attention to themselves and the concepts they embody and articulate. Our counterfunctional cameras are also "conceptual focusing devices".

As described in our prior work (Pierce & Paulos, 2015), the concept of enabling limitations extends the concept of counterfunctionality. Enabling limitations articulates a more general feature of human-technology relations and directly builds on philosopher of technology Peter-Paul Verbeek's work on technological mediation (Verbeek, 2006). Drawing on the work of Latour, Akrich and Ihde, Verbeek describes how the details of a technology work to both invite and inhibit human interaction, and amplify and reduce human perception. The concept of enabling limitations

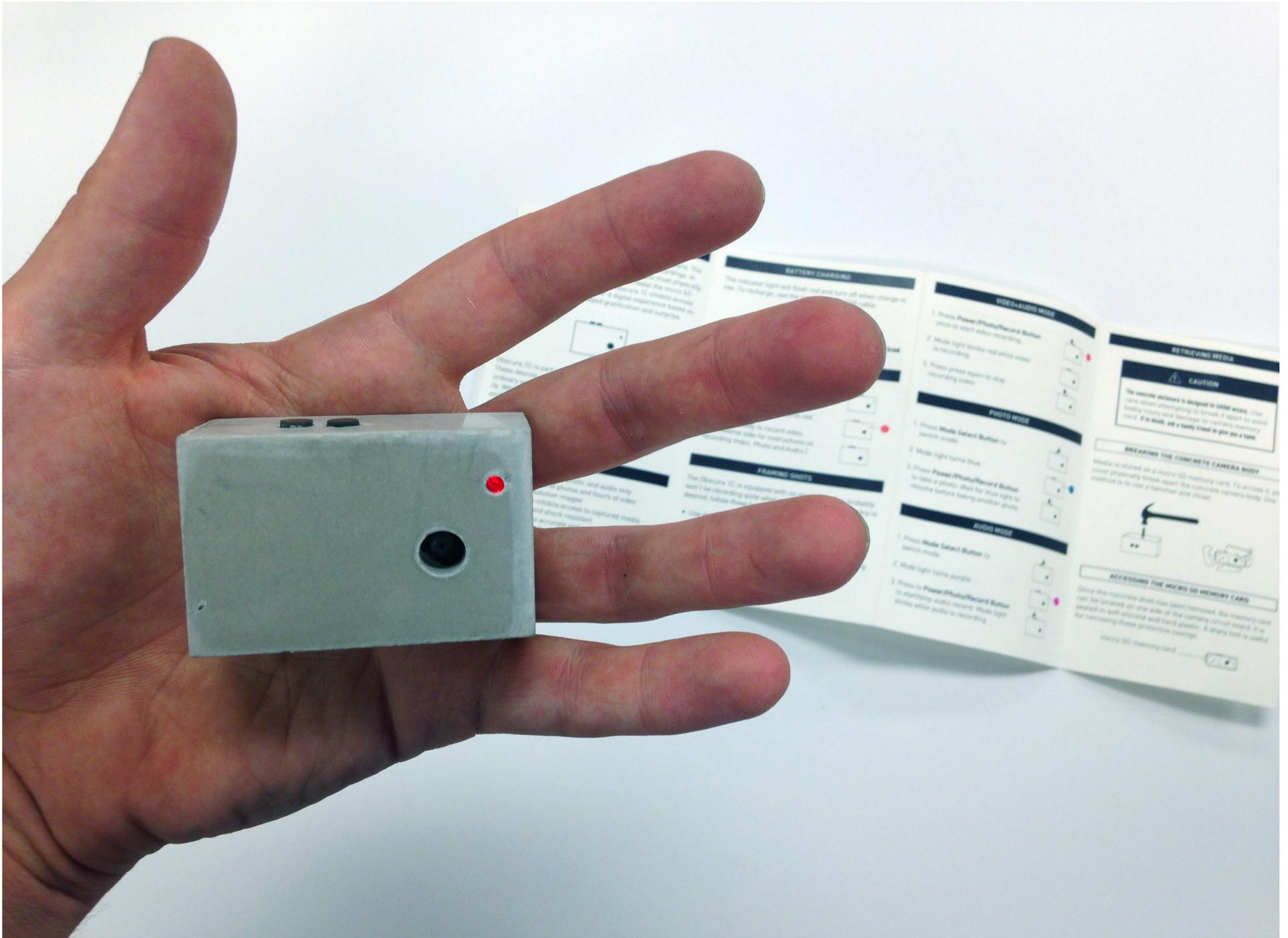
shows how objectively negative features of a design (what things don't do, c.f. Verbeek) may contribute to the subjective experience of something positively enabling (a useful or desirable feature). What may initially be considered a technological limitation may also enable new positive possibilities. Conversely, the concept of limiting possibilities articulates how seemingly neutral options can in fact be limiting, even disabling.

While our work builds upon and adds to such theory, here we say relatively little about the Obscura 1C. We have in fact designed the Obscura 1C specifically so that it can "speak for itself", so to speak. Subsequently we experiment here with a format for research through design products and publications where artifacts themselves are given a stronger verbal and non-verbal voice. Here we make heavy use of artifacts we believe are underutilized in research through design: instruction manuals, packages and peripherals. We present the Obscura 1C within this document accordingly.





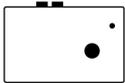




# Obscura 1C Instruction Manual

## OBSCURA 1C DIGITAL CAMERA

Thank you for acquiring the Obscura 1C Digital Camera. The Obscura 1C captures photo, video and audio recordings. In order to access the media files recorded, you must physically break apart the concrete enclosure to reveal the micro SD memory card buried inside. The Obscura 1C inhibits access to its contents to offer a digital experience based on uncertainty, patience, delayed gratification, and surprise.



Obscura 1C is part of the Counterfunctional Device Series. These devices are built around the principle of countering ordinary and expected functionality to create new functionality. While we celebrate digital technologies for their seemingly endless possibilities, Obscura 1C offers a unique experience based on digital limitation. As a Counterfunctional Device, it brings into focus an idea applicable to many areas: Limitations can enable new positive possibilities.

## FEATURES

- captures video (with audio), photo, and audio only
- 4GB memory = 1000s of photos and hours of video
- distinctly lower resolution images
- concrete enclosure inhibits access to captured media
- extremely durable and shock resistant
- no viewfinder for less accurate and predictable frames
- small size convenient for carrying in pocket or bag

## BATTERY CHARGING

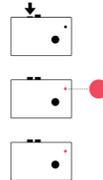
The indicator light will flash red and turn off when charge is low. To recharge, use the mini USB to USB cable.



**Note: Media is not accessible via USB. To access stored media you must break the camera apart. (See "Retrieving Media" section.)**

## POWER ON/OFF

1. Press and hold for 2 seconds the **Power/Photo/Record Button**.
2. The Mode Indicator light turns red.
3. Camera is ready to record video.  
(See reverse side for instructions on recording Video, Photo and Audio.)



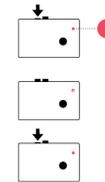
## FRAMING SHOTS

The Obscura 1C is equipped with no viewfinder. You probably won't be recording quite what you think you are. If accuracy is desired, follow these heuristics:

- Use the top edge to guide vertical alignment and the sides to guide horizontal alignment.
- With the camera held 6 inches from the eye, the area obscured by the camera body 2 feet away is approximately the area within the camera view.
- When in doubt, step back. The view angle is narrow.

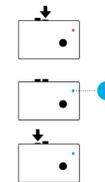
## VIDEO+AUDIO MODE

1. Press **Power/Photo/Record Button** once to start video recording.
2. Mode light blinks red while video is recording.
3. Press **Power/Photo/Record Button** to stop recording video.



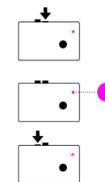
## PHOTO MODE

1. Press **Mode Select Button** to switch mode.
2. Mode light turns blue.
3. Press **Power/Photo/Record Button** to take a photo. Wait for blue light to resume before taking another photo.



## AUDIO MODE

1. Press **Mode Select Button** to switch mode.
2. Mode light turns purple.
3. Press to **Power/Photo/Record Button** to start/stop audio record. Mode light blinks white audio is recording.



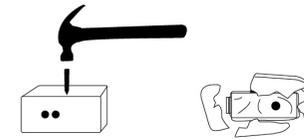
## RETRIEVING MEDIA

### CAUTION

The concrete enclosure is designed to inhibit access. Use care when attempting to break it apart to avoid bodily injury and damage to camera memory card. **If in doubt, ask a handy friend to give you a hand.**

## BREAKING THE CONCRETE CAMERA BODY

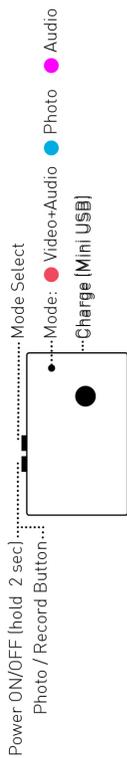
Media is stored on a micro SD memory card. To access it, you must physically break apart the concrete camera body. One method is to use a hammer and chisel.



## ACCESSING THE MICRO SD MEMORY CARD

Once the concrete shell has been removed, the memory card can be located on one side of the camera circuit board. It is sealed in soft silicone and hard plastic. A sharp tool is useful for removing these protective casings.

micro SD memory card



### FREQUENTLY ASKED QUESTIONS

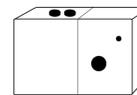
- 1. Will my photos and recordings really be there?**  
Yes, as long as you are operating the camera properly. Although one can never be completely certain of anything.
- 2. I don't get it. What's the point of this?**  
That's okay. Just use your camera phone instead.
- 3. Can I tell how much memory is left?**  
No. The camera can store 1000s of photos and hours of video and audio. When the memory is full, the indicator light will turn off after a few seconds and will not switch modes.
- 4. It seems to have stopped working. What do I do?**  
Although our devices have been carefully tested, they are still hand-crafted prototypes. If it has stopped working, now could be a good time to open it, or store it away.
- 4. Will this product ever be available at a major retail outlet?**  
Probably not.
- 5. Where can I get another one of these cameras?**  
Currently our supply is very limited. But please send inquiries to [counterfunctionaldevices@gmail.com](mailto:counterfunctionaldevices@gmail.com)
- 6. What will the images look like? How will the audio sound?**  
Like the image below. Audible, but not great.



date / time

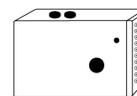
### MORE OBSCURA CAMERAS...

Obscura 1W



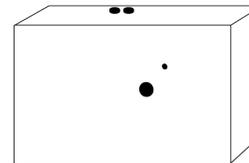
Snap the wooden enclosure to retrieve media.

Obscura 1F



Remove the 24 aluminum fasteners to retrieve media.

Obscura 1C-L

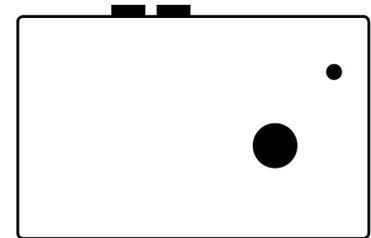


Break the large concrete body to retrieve media.

For additional counterfunctional devices visit [www.counterfunctionaldevices.com](http://www.counterfunctionaldevices.com)

# OBSCURA 1C

DIGITAL CAMERA



COUNTERFUNCTIONAL DEVICE SERIES

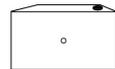
# Counterfunctional Cameras Brochure

**COUNTERFUNCTIONAL CAMERAS** are devices built around the principle of countering ordinary and expected functionality to create new functionality. While we celebrate digital technologies for their seemingly endless possibilities, these cameras offer unique experiences based on inhibited, restricted and absent functionality. The Counterfunctional Device series is designed to bring into focus an idea applicable to many areas: Limitations can enable new positive possibilities.

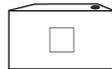
For more Counterfunctional Devices visit  
[counterfunctionaldevices.com](http://counterfunctionaldevices.com)

## Ultra-Low Resolution Cameras

These cameras offer a refreshing reversal of the trend toward higher and higher resolution technology. The displays are composed of discrete LCD lights with frosted glass overlays. These images stand in sharp contrast to the overabundance of high resolution images that surround us. The ultra-low resolution images can be transferred off of the camera in JPG and RAW formats.



0x0 Pixel



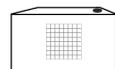
1x1 Pixel



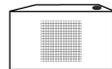
2x2 Pixel



4x4 Pixel



8x8 Pixel

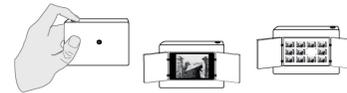


16x16 Pixel

Cameras have the option to shoot in Color or Black & White. Note that these cameras do not capture high-resolution counterparts, so you can be sure the photographs are uniquely ultra-low res.

## Cabinet Cameras

The Cabinet Cameras are akin to printed photo album. You can only view the photos you take on the built-in display. You can not transfer, reproduce or edit the photos. Deleting photos leaves a visible void when viewing in Gallery mode. These limiting features allow you to enjoy the imposed uniqueness of the digital photographs you take, view and share with those nearby.



The **Cabinet 1/12** model can be initialized with an image capacity of either 12 photos or just 1 photo. This irreversible decision is one you must make during the initial setup of the camera. Similarly, the **Cabinet 120/1200** gives you the option for either a 120 or 1200 photo capacity, while the **Cabinet 12K/120K** offers either a 12,000 or 120,000 photo capacity! The Cabinet 1/12 is recommend if you want to appreciate a small, select group of images. The Cabinet 12K/120K is recommended if you prefer to capture many images on an ongoing basis or wish to pass this camera on to others for years to come.

## Obscura L Series and S Series

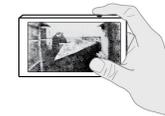
Also available are the larger, heavier format L Series (ideal for capturing photos of a specific location like a home or workplace) and the smaller, lighter format S Series (ideal for capturing diverse moments on the go).



## Fixephemera Camera

Fixephemera allows you to hold fleeting photographic moments. It's like the popular app Snapchat, but personal. The photos you take pixelate and deteriorate with every second they are displayed. After 1 minute of total viewing time the photo has deteriorated to a single color representative of the original image. However, you can always pause the deterioration by hiding the image.

It's up to you how you choose to engage with each Fixephemera image: You can look at it right away, but never again. Or you can glimpse at it occasionally, and watch it slowly decay over time. Or you can save it indefinitely, as a hidden but potentially viewable image.



⌚ 0 seconds of total display time



⌚ 5 seconds of total display time



⌚ 10 seconds of total display time



⌚ 30 seconds of total display time



⌚ 45 seconds of total display time



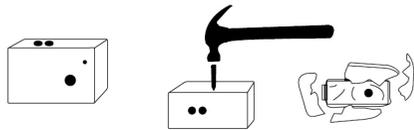
⌚ 60 seconds of total display time

### Obscura Cameras

Obscura is a digital revitalization of disposable film cameras. These cameras inhibit access to their contents to offer digital experiences based on uncertainty, patience, delayed gratification and surprise.

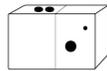
#### Obscura 1C

In order to access the media files recorded, you must physically break apart the concrete enclosure to reveal the micro SD memory card buried inside.



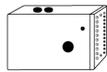
#### Obscura 1W

Snap the wooden enclosure to access the SD memory card. Obscura 1W is less inhibitive than Obscura 1C.



#### Obscura 1F

Remove 24 aluminum fasteners to access the SD memory card. Return the fasteners to resume taking photos. Obscura 1F encourages infrequent access to its contents.



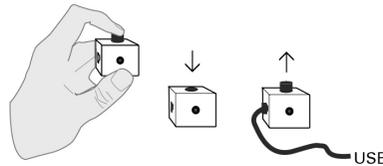
#### Obscura 1P+

Shatter the delicate porcelain enclosure to access the SD memory card. Obscura 1P+ is designed to discourage access and encourage intrigue. Comes equipped with a display showing total number of images taken.



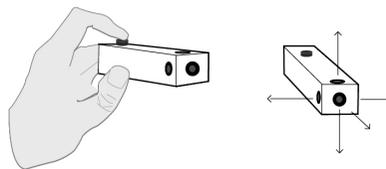
### Single-Shot Cameras

The earliest cameras could take only one photograph at a time. In order to take another photo you had to manually reload the camera. The Single-Shot Cameras give back the option to only take one single photo at a time, and to appreciate an only photo taken. Before taking another photo you must manually transfer the image to your computer.



### Single-Shot Multi-Angle

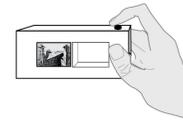
The multi-angle version entices you to adopt a single-shot mentality with a unique new positive feature. The camera instantly captures photos in 5 orthogonal directions. A composite photo is created along with a separate photo for each of the 5 angles.



Even more counterfunctional cameras...

### Retrieval Camera

The Retrieval Camera does not display the photo you've just taken. Instead it displays a photo previously taken. Choose between two shooting modes: Random Photo -or- Related Photo.



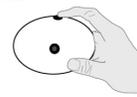
### Peripheral Camera

Peripheral Camera captures images to either side and puts them at the center.



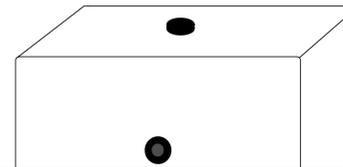
### Prompt Camera

You can only take pictures when the Prompt Camera lights up and chimes at random moments—prompting you to take a picture when you otherwise would not.



### Fixture Camera

This camera is bulky and extremely heavy. Think carefully about where you put, because it's a hassle to move.



# COUNTERFUNCTIONAL CAMERAS

counterfunctional cameras are devices built around the principle of ordinary counterfunctionality. While we celebrate digital technologies for their seemingly endless possibilities, these cameras offer a unique experience based on implicit and restricted counterfunctionality. Device Series is designed to bring into focus an idea applicable to many areas that can enable new positive possibilities!

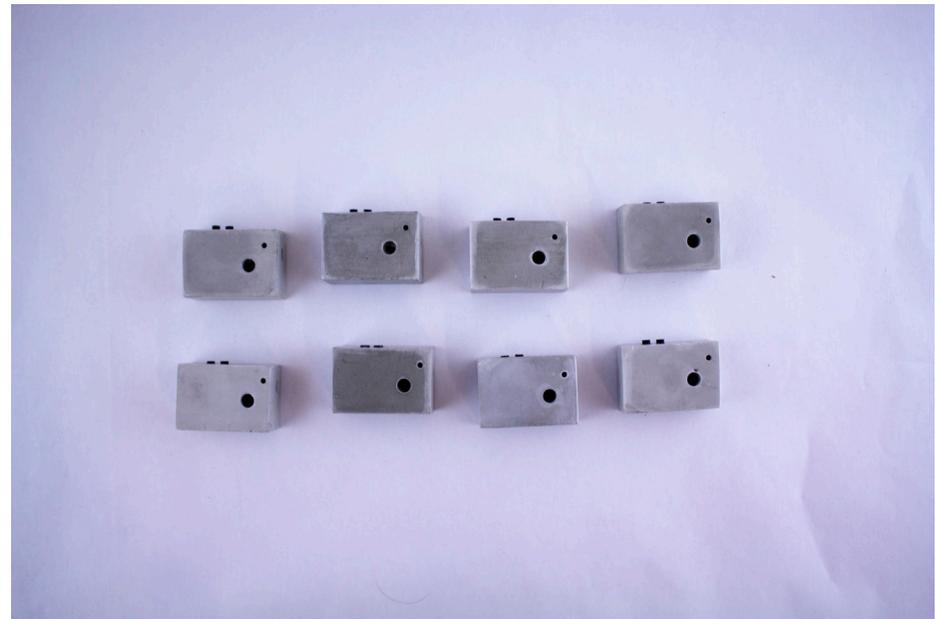
COUNTERFUNCTIONAL DEVICE SERIES

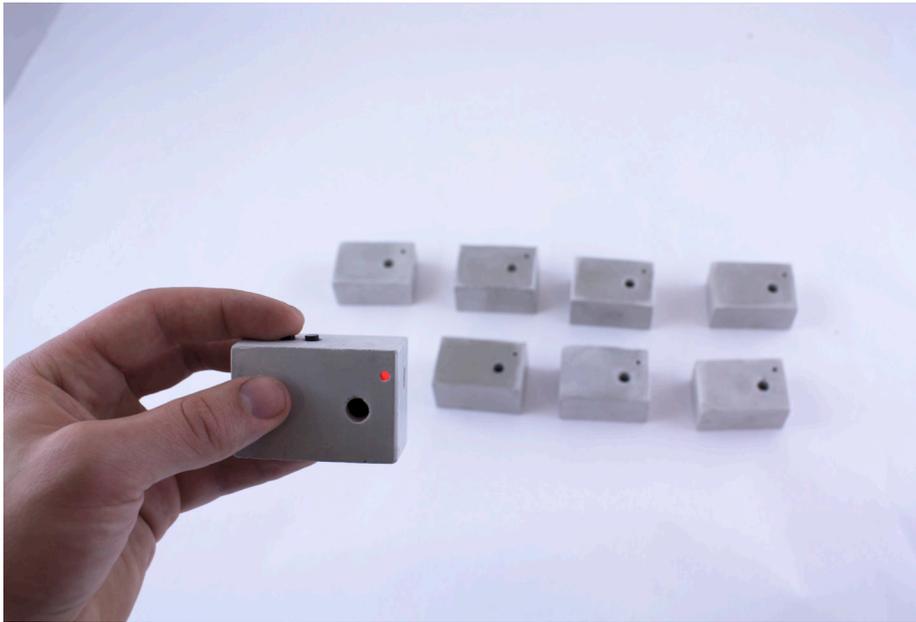
## Batch Prototyping

As we have described in prior work (Pierce & Paulos, 2015), following Gaver et al (Gaver et al, 2013), we adopted a batch-prototyping production process. To date we have batch-produced approximately 20 Obscura 1C cameras and plan to produce more. The ability to batch-produce the cameras at low-cost was a primary consideration in our design. The total cost of materials for each camera is approximately \$20.

Early operational prototypes included a display that counted up with each image taken (“0001”, “0002”, etc.). While we have successfully built and continue to develop versions with displays, we ended up proceeding with a simpler version for batch production. This version makes use of an inexpensive digital camera costing approximately \$10. To produce the Obscura 1C, the camera electronics are removed and sealed in protective thermoplastic (HMA) and ABS support pieces. This is then cast in Rocktite™ patching cement using a custom mold. The cast forms are then roughly sanded only to deburr the sharp edges, leaving a distinctly hand-cast look and feel. Next, laser-cut button assemblies are installed. Finally, the cameras are tested prior to physically removing the data pins from the USB charging port—effectively sealing off access to the SD memory card buried inside. The Obscura 1C cameras currently take several hours each to construct. However, we are already developing ways to streamline this process.

Cost, ease of production, and robustness of the end product were the main reasons we opted for a version that did not include a numerical display or viewfinder. This also required us to rely on a low-quality image sensor producing grainy images reminiscent of security camera videos. Interestingly, while these decisions were initially viewed as worthwhile tradeoffs, they were quickly reconstituted as additional counterfunctional features (and advertised as such in the product packaging). The lack of a display and viewfinder added elements of uncertainty and surprise, while the lower resolution camera created images perceptually distinct from normal digital photos.





## Packaging

Products that are mass-produced carry an aesthetics based on the possibilities and limitations of industrial processes, tools and materials. One-off and batch-produced products and prototypes can choose to replicate the aesthetics of mass-production. But they can also depart from it. In our production of the Obscura 1C we sought to create a hybrid aesthetic that references mainstream commercial product design but without attempting to fully replicate or simulate the formal aesthetics of mass-produced commercial electronics.



Our intent was to create productive tensions and ambiguities concerning what the Obscura 1C is and how it can be used. On the one hand, the Obscura 1C is clearly a hand-produced artifact. But on the other hand it asks the user to consider that it or something like were in fact a mass-produced product. On the one hand, the Obscura 1C looks and operates similar to mainstream electronic products. But on the other hand it is associating itself with this genre so it can be a tool for questioning and interrogating these products. On the one hand, the Obscura 1C is completely functional and usable. It's not asking the user to creatively imagine technical features that are not supported. But on the other hand, it wants to also be used conceptually to imagine products and scenarios that extend beyond its immediate technical capacities.

The final packages are designed to present themselves in a way that, if read carefully—and with the proper expertise—can be verbally translated as follows: “You can take me as a mass-market retail product. Or you can take me as a one-off art project. But in actuality, I’m an experimental design product produced in very limited quantities—a product that intentionally plays into the genres of both mass-market consumer products and artistic productions.”

The visual and physical form of the Obscura 1C packaging references 5 key product genres:

1. Sleek, modern product design exemplified by Apple. Examples: The name “Obscura 1C”; lots of whitespace and a modern sans-serif logotype on the cover.
2. Lower-end consumer electronics & instruction manuals. Examples: The layout and language of the manual, such as black headers and a “Caution” message.
3. Artist’s books (a genre where the particular codec form dovetails with the artistic intention). Examples: The use of high-quality archival paper for the manual and brochure; the tongue-in-cheek uses of the Frequently Asked Questions format; the negative leading of the Obscura 1C logotype and brochure cover (which plays into both “obscurity” and “counterfunctionality”).
4. Zines (self-published, typically low-cost print publications). Ex-

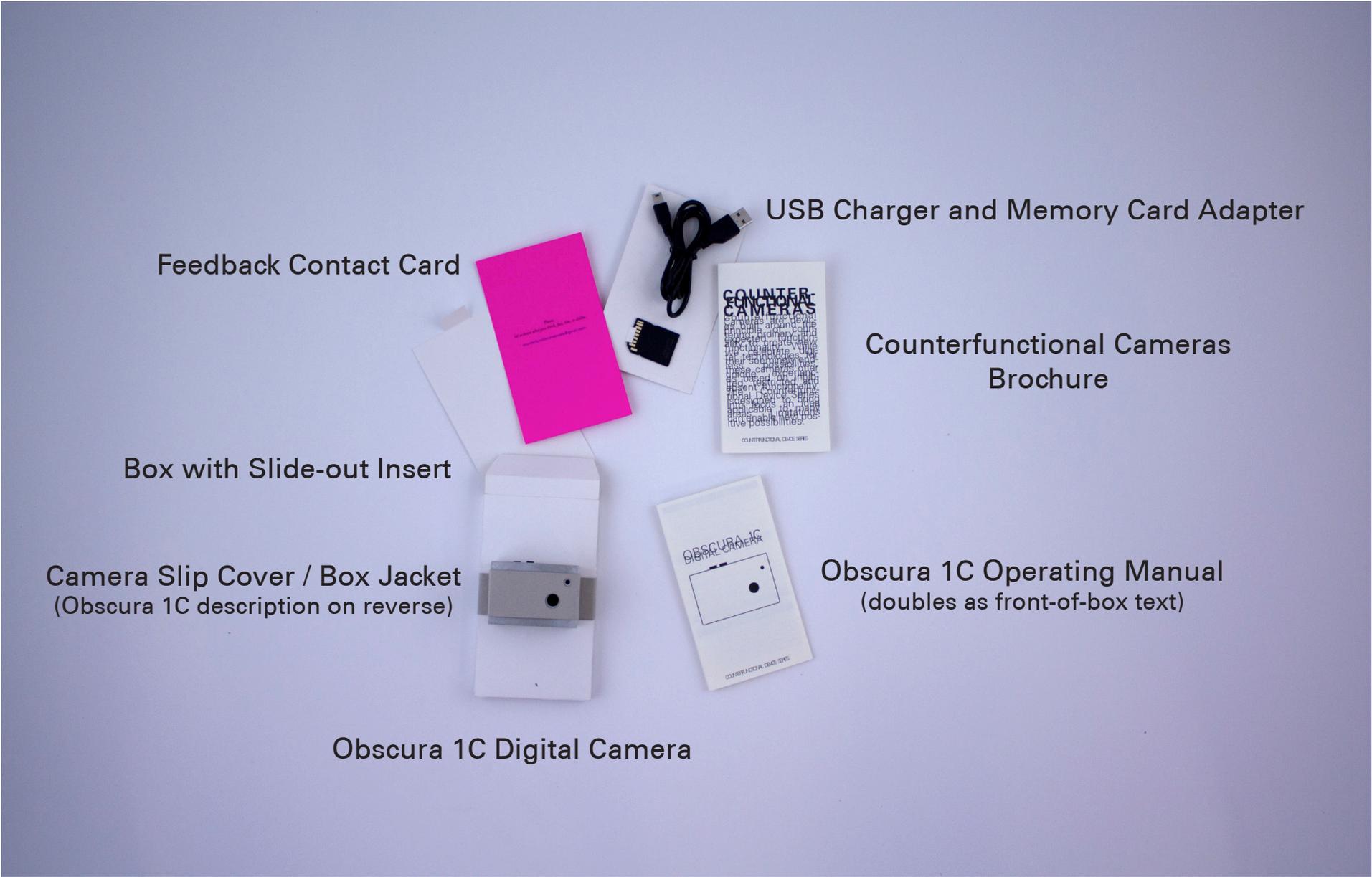
amples: All of the packaging elements can be created with accessible everyday tools without relying on offset printing, injection molding, 3D printing, etc.

5. A one-off, hand-crafted object aesthetic of the camera body, which creates a juxtaposition with the industrial aesthetic of everyday cameras and consumer electronics. Examples: The rough, hand-deburred edges of the slightly imperfect rectangular concrete camera bodies.

## Experimental Distribution

As described in prior work (Pierce & Paulos, 2015), to date we have distributed 10 complete Obscura 1C packages to non-acquaintances. Our primary goal has been to experiment firsthand with different forms of distribution and exchange. We approach this both as exploratory prototyping (with ties to packaging and service design) and as a means of demonstrating “proof of distribution concept”.

Our initial distribution has been through [anonymized city] Craigslist classified ads posted to the “Free” and “For Sale, Photo+Video” sections. Other distribution outlets we have experimented with include local retail partnerships, community bulletin boards, and guerilla tactics such as “droplifting” (leaving a product in a retail store). Encouragingly, we’ve also received a handful of unsolicited word of mouth requests to purchase Obscura 1C and other Counterfunctional Cameras.



Feedback Contact Card

USB Charger and Memory Card Adapter

Counterfunctional Cameras Brochure

Box with Slide-out Insert

Camera Slip Cover / Box Jacket  
(Obscura 1C description on reverse)

Obscura 1C Operating Manual  
(doubles as front-of-box text)

Obscura 1C Digital Camera

Thus far, our distribution has explicitly not been for data collection. Rather we have thus far treated distribution as a form of prototyping (with an emphasis on service and experience design). While we do intend to conduct more traditional user studies in future work, here we focus on conceptual and imagined use of the Obscura 1C, rather than the empirically studying observed firsthand use.

#### Obscura Camera (experimental design product) (oakland north / temescal)



condition: new size / dimensions: 3 x 5"



We are offering a limited number of unique digital cameras as part of an experimental design program. Our aim is to create and distribute unconventional, alternative consumer products.

The "Obscura 1C Digital Camera" is the product being offered here. The Obscura 1C captures photo, video and audio recordings. In order to access the media files recorded, you must physically break apart the concrete enclosure to reveal the micro SD memory card buried inside. Obscura inhibits access to its contents to offer a digital experience based on uncertainty, patience, delayed gratification and surprise.

The Obscura 1C comes with operating instructions, USB charger, and micro SD card adapter. Also included is a pamphlet of additional devices we have created.

Because our devices are produced on very limited scales and with non-profit-driven goals, we distribute them on an ad hoc basis. Ordinarily we sell this model for \$20 - 50 (to recuperate material and labor costs).

But here we are offering a very small number for free!

If you'd like to acquire an Obscura 1C, send us a message with a few words telling us why you'd like to have one of these devices. Products will be given away on a first come, first serve-ish basis to individuals that seem like they really want one. Limit one device per person.

• do NOT contact me with unsolicited services or offers

post id: 4644696173 posted: seconds ago [email to friend](#) [best of](#)

## Conclusion

Conceptually, what can we make of the Obscura 1C? As we've described in prior work (Pierce & Paulos, 2015), we like to think that the Obscura 1C has multiple, open-ended conceptual uses.

**Obscura 1C as inhibitive interface.** The Obscura 1C concretely articulates how an interface can inhibit desired interactions in ultimately desirable ways.

**Obscura 1C as counterfunctional design.** The Obscura 1C demonstrates a design process that involves identifying common positive features of a technology and then designing around the absence or inhibition of these features. As a material design outcome, the Obscura 1C shows how useful, desirable functionality can emerge counterintuitively through this process.

**Obscura 1C as enabling limitation.** The Obscura 1C helps articulate the concept that inhibited or absent functionality (negative functionality) can in fact enable positive functionality. This concept builds directly on technological mediation theory, which describes how technologies both invite and inhibit human action (Verbeek, 2005). In the case of the Obscura 1C, inhibited access to digital images enables positive experiences of delayed gratification, surprise and intrigue. Technologies as diverse as Twitter, Snapchat, vinyl records, printed newspapers and various reserach

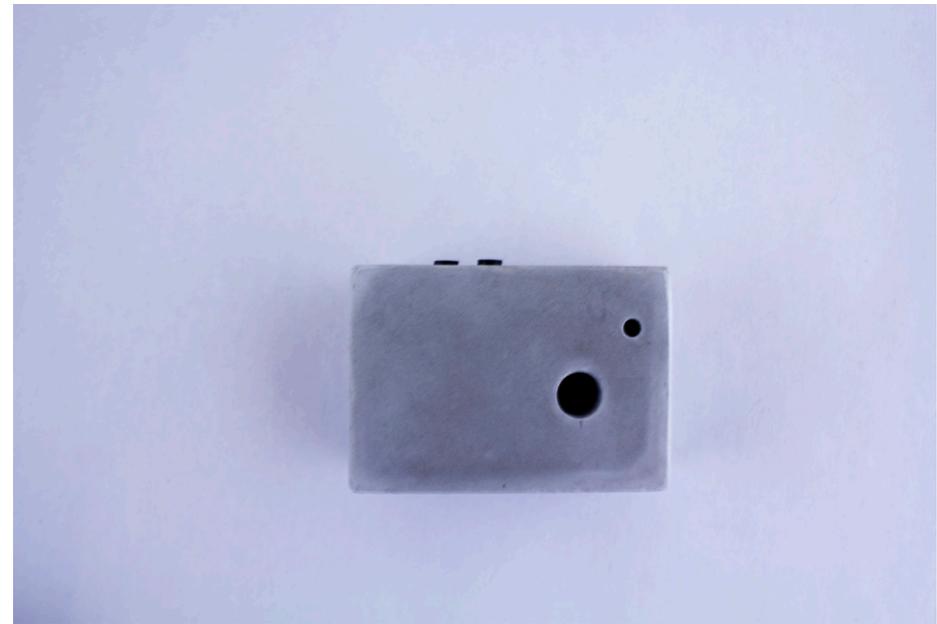


through design exemplars such as Photobox (Odom et al, 2012a, 2012b) and Drift Table (Gaver et al., 2004) offer further insights when analyzed through the concept of enabling limitations.

**Obscura 1C as designing digital limitations.** The Obscura 1C serves as a focal point among a wider array of counterfunctional cameras that give shape to a design space of designing digital limitations. While this space is highly motivated in theory (e.g., Baumer et al., 2013; Crary 2013; Håkansson & Sengers, 2013; Harmon & Mazmanian, 2013; Harper, 2012; Leshed & Sengers, 2011; Mayer-Schönberger, 2009), it remains practically underexplored through design.

**Obscura 1C as critique/philosophy translated.** One way to understand conceptual use of the Obscura 1C is that it serves as an example of “higher-level” concepts. While this is a useful way to see things, we prefer to also engage with the Obscura 1C as a translation from verbal concepts to material things. Such material translations—as “ideas lodged in things” (Dworkin, 2013, p. 124)—are not necessarily reductions or “dumbing down” but rather should be seen as “equals to, or even improvements over, the original—precisely to the extent that they depart from it” (p. 118). Even as we make conceptual use of the Obscura 1C here, we should not lose touch (even if it is an imagined touch) with the device’s embodied and embedded firsthand uses. For it is precisely these departures from abstract concepts that make material things so concretely compelling.

**Obscura 1C as fictional (?) everyday product genre.** The Obscura 1C tries to blur the boundaries between discursive and everyday object in an attempt to assert itself as part of an imaginary (but plausible?) new product genre: Real conceptual products, which you can actually touch and use; everyday philosophical objects. In contrast to user-centered design prototypes, the details of the Obscura 1C’s form and function suggest that it will never be a mass-market retail product; while in contrast to the hyperrealist aesthetics of critical and speculative design (Dunne and Raby, 2014), it suggests that it might.





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