

Ulysses' ropes and the inherent limits of digital self-control tools

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- 1, 2. Definitions, supporting examples, background
3. Exposition of inherent limits
4. Further implications

Definitions

Self-binding: a voluntary action by an individual that knowingly limits the individual's available actions at a later point
(see Abandoning the Dream of Omnipotence: On Autonomy and Self-Binding - Charlie Coil, 2018)

- Ideal case is found in *The Odyssey*

Digital self-control tools (DSCTs): self-binding applications that constrain future usage of devices or specific applications

Definitions: Categories of DSCT methods

Categories of DSCT methods as put forth by
Self-Control in Cyberspace: Applying Dual Systems
Theory to a Review of Digital Self-Control Tools - Ulrik
Lyngs et. al, 2019:

- Blocking or removal of specific features
- Self tracking
- Goal-enhancement
- Reward/punishment



Screen Time
(iOS)

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Cold Turkey
(Windows/Mac)

A dose of discipline, built in.

Other website blockers are too easy to cheat. That's why you'll love Cold Turkey. By default, when you start a block, there's no turning back.

Too intense? Just turn off the locking feature before starting a block.

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Focus - put your phone down & stay focused

Riafy Technologies Productivity

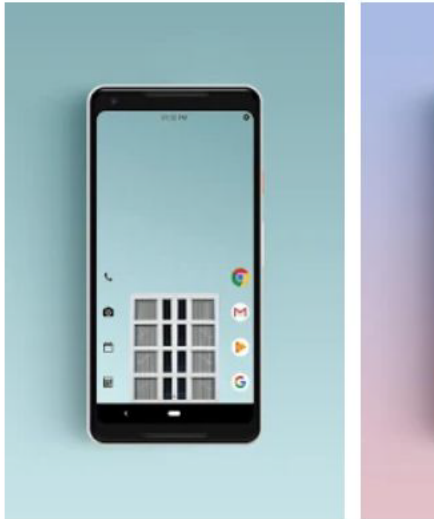
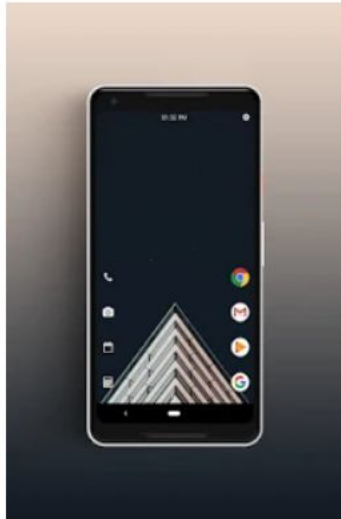
★★★★★ 94

E Everyone

 This app is compatible with your device.

 Add to Wishlist

Install



Focus
(Android)

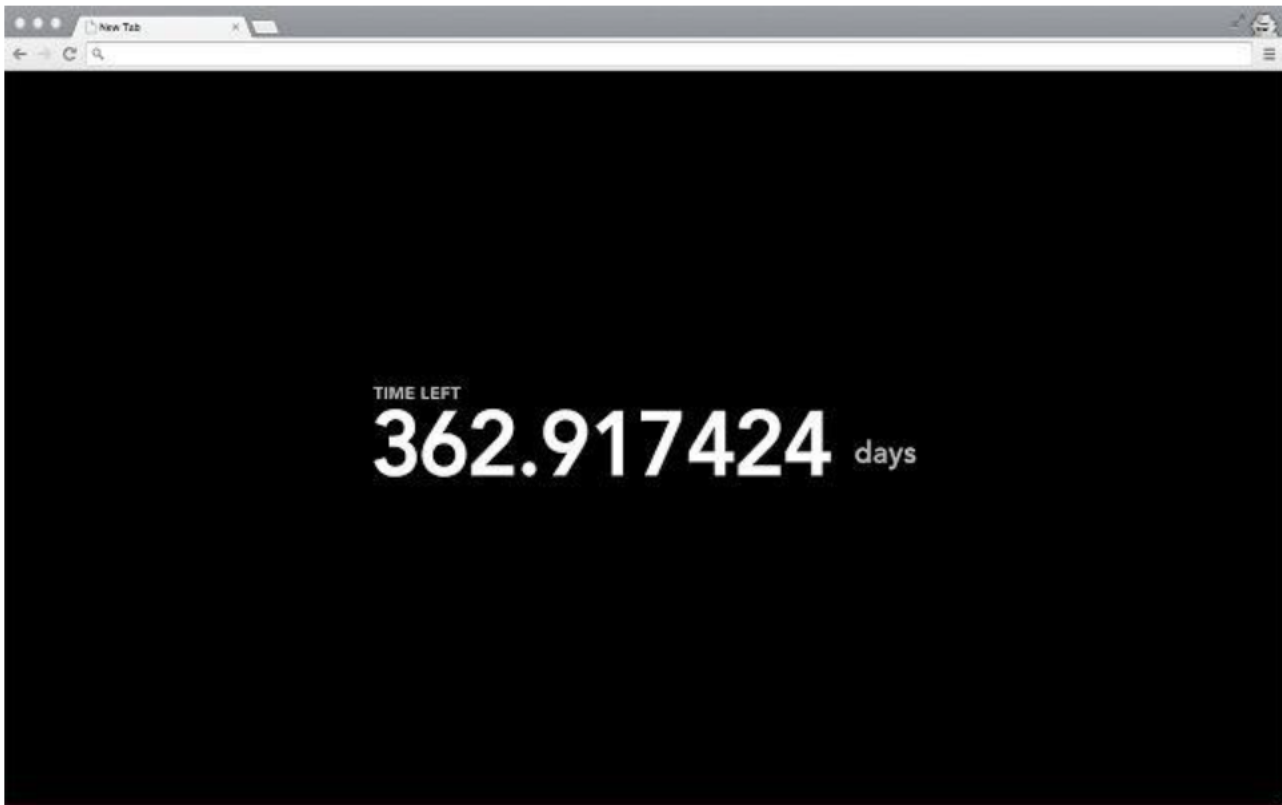


Death Focus

Offered by: kevin

★★★★★ 15 | Fun | 474 users

☑ Runs offline



Death Focus
(Google Chrome)

Previous inductive research on DSCT effectiveness

- The Race Towards Digital Wellbeing: Issues and Opportunities
Alberto Monge Rofarello and Luigi De Russis, 2019
- Modeling the Engagement-Disengagement Cycle of Compulsive Phone Use
Jonathan A. Tran, Katherine S. Yang, Katie Davis, Alexis Hiniker, 2019

Exposition: Ideal self-binding in The Odyssey

“...I alone should hear their singing. Bind me, to keep me upright at the mast, wound round with rope. If I beseech you and command you to set me free, you must increase my bonds and chain me even tighter.”
(The Odyssey, Homer tr. Wilson, 2017)

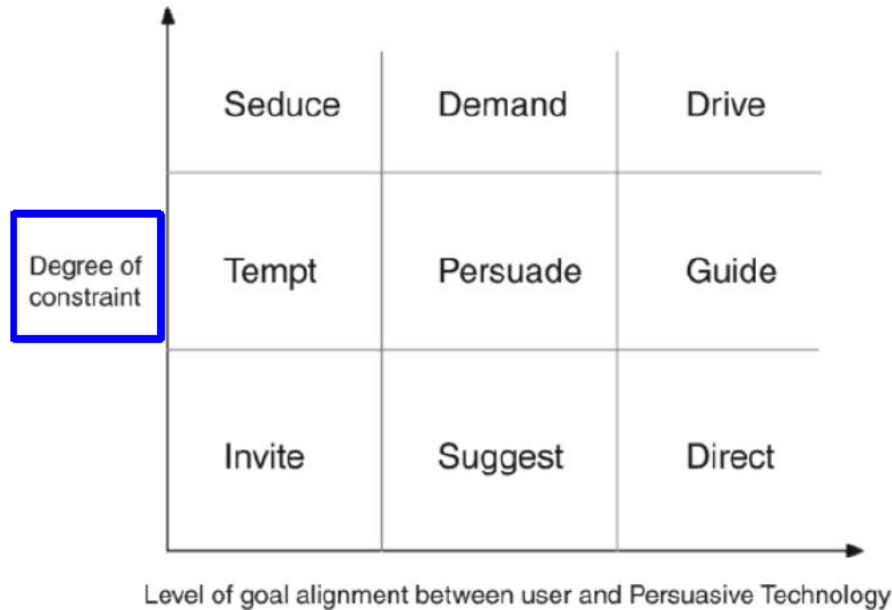
Exposition: Individual vs. monolithic choice

- Authoritarian and Democratic Technics - Lewis Mumford, 1964
“two technologies have recurrently existed side by side ... the first system-centered, immensely powerful, but inherently unstable, the other man-centered, relatively weak, but resourceful and durable”
- Choice Architecture - Richard Thaler, Cass Sunstein, John Balz, 2010
“These behavioral tendencies toward doing nothing will be reinforced if the default option comes with some implicit or explicit suggestion that it represents the normal or even the recommended course of action.”

Exposition: Inherent limits

- Incomplete binding
- Inability to comprehensively detect or correct circumventions
- Inability to allow legitimate overrides
- Instability
- Pressuring of users due to other embodied desires

Exposition: Incomplete binding



James Williams

- Stand Out of Our Light - James Williams
- Ulysses Unbound: Studies in Rationality, Precommitment, and Constraints - Jon Elster

Exposition: Incomplete binding



Time Limit

You've reached your limit on Pinterest.

[Ignore Limit](#)

Screen Time (iOS)

Exposition: Incomplete binding

October 3, 2019

Thank you for your feedback! Unfortunately, it's up to the device when it decides to start up applications after boot. If it takes time, there is nothing AppBlock can do to make it faster. There will always be ways to work around AppBlock, it's here to help, not to take over.

AppBlock (Android)

Exposition: Incomplete binding

Has no effect on iOS ★★☆☆☆

by — Jan 25, 2017

I've stuck with this for two years or so, paying for premium support, and seen the product improve and gain sophistication, but it still doesn't work. On Mac OS, if you wake from sleep during a block session, you will have several minutes before Freedom takes effect. On iOS, it either does not recognize the beginnings and ends of block sessions, remaining 'frozen' in block or open mode; or, most recently, on my iPad, simply does nothing, although it obligingly reports that a block is underway. You can simply browse as if nothing was happening. It's a disappointment—and given how long they've had to work out the cross-platform kinks, a disappointment beginning to verge on a scam. Having said that, it works well enough on Mac OS to make a difference in your Internet habits if you don't have an iOS device. The problem is, everybody does.

Freedom (iOS)

Exposition: Incomplete binding

Modified Jun 6, 2018 ★★★★★

The only reason I am giving one star is that they dont have Edge extension and thats bad. Because you cant open the distracting websites on chrome but you cant stay focused because you can easily can open on Edge. Its like you want to prevent yourself eating fast-food and you limit yourself from only one fast-food chain but you can easily go to other fast-food chains. Or at least I couldn't find their extension for Edge.

StayFocused
(Google Chrome)

Exposition: Inability to comprehensively detect or correct circumventions

Incomplete binding

- Outside of DSCT

Inability to comprehensively detect or correct circumventions

- Within DSCT

Exposition: Inability to comprehensively detect or correct circumventions

★ ★ ★ ★ ★ August 15, 2019



This app has a loophole it automatically closes the offtime if u change the time if anybody intelligent finds a way to change the time in case he cant resist himself this app will become useless

Offtime (Android)

Exposition: Inability to comprehensively detect or correct circumventions

100% 300 100%

★★★★★ March 28, 2019



you can bypass the lock if you go to fullscreen or in split screen mode

Cold Turkey
(Android)

Exposition: Inability to comprehensively detect or correct circumventions

Too easy to deactivate ★☆☆☆☆

by — Jan 16, 2017

You only need to turn off and on the vpn in iOS settings to deactivate the app block. Makes this app pretty much useless.

Freedom (iOS)

Exposition: Inability to comprehensively detect or correct circumventions

★★★★★ January 21, 2019



unfortunately it is really easy to go around block, so it is mostly symbolic - but from what I
obie this is fundamental and unfixable Android system limitation (and existing for good
reasons, otherwise malicious apps would be able to also block stopping them)

Offtime (Android)

Exposition: Inability to allow legitimate overrides

On Violence - Hannah Arendt, 1969

“Power springs up whenever people get together and act in concert, but it derives its legitimacy from the initial getting together rather than from any action that then may follow... Violence can be justifiable, but it never will be legitimate.”

Exposition: Inability to allow legitimate overrides

★ ★ ★ ★ ★ May 21, 2019



I installed it but quickly removed it after I realized I couldn't call 911 in case of emergency. I don't want to die for my productivity. I'll keep using the pc version though.

Cold Turkey (Android)

Exposition: Inability to allow legitimate overrides

★ ★ ★ ★ ★ August 2, 2019



I set the lock out timer to 30 minutes. 2 hours later? I'm still locked out of my apps. So I did the assigned long press+ wait 15 minutes. It just kept resetting the damn timer. So I tried to get into my system apps to uninstall it. Wouldn't let me do that. Just reboot your phone and uninstall the app BEFORE opening it, and that might do the trick if it 'permanently' locks you out.

Offtime (Android)

Exposition: Inability to allow legitimate overrides

★ ★ ★ ★ ★ June 20, 2019



8



I downloaded this to check out what features it had. Opened it, saw it was very limited, decided to uninstall. But the app kept opening on my phone while I was attempting to uninstall, preventing me from doing so! I finally just allowed it to block my access for a minute, which seemed to satisfy it, which then allowed me to uninstall. Terrible experience.

Cold Turkey (Android)

Exposition: Inability to allow legitimate overrides

Modified Jun 5, 2018 ★★★★★

why can't i disable it at the moment when i need to do something important !!!!!!!!!!!!!

StayFocusd (Google Chrome)

Exposition: Instability

★★★★★ September 14, 2019



Last update didn't fix my battery indicator

October 19, 2019

It's an issue with external plugin :(

LessPhone (Android)

Exposition: Instability

★ ★ ★ ★ ★ August 8, 2019



Shifted my 5 star rating to 1... as i shifted my mobile from Samsung S8plus to Vivo Z1pro..
no app blocking on 90% of cases. Pls do something about it. This app was my control over
my mobile addiction but now its haywire... pls put an update fast

Stay Focused (Android)

Exposition: Instability

If you are a new customer looking for our iOS app, please accept our apologies.

Apple's removal was unexpected and came on a weekend. We're working hard to update our website and help documents. We'll be offering our customers generous credit for their patience while we work to get this sorted out. And of course our desktop apps and website are working as normal and will be available for use.

October 26, 2018

- After numerous delays and long review cycles, Apple has accepted our new app. This new app is limited to blocking websites on Safari. We will continue our appeals to Apple to reinstate our previous App.

Freedom (iOS)
press releases

Exposition: Pressuring of users due to other embodied desires

“Certain technologies in themselves have political properties.”

Do Artifacts Have Politics? - Langdon Winner, 1980

Exposition: Pressuring of users due to other embodied desires

October 14, 2019

Thank you for your feedback, Faith! There have to be some limitations in free version, because we have to pay our developers, but you can purchase PRO version which has more features and there are no limitations and ads :) The max is 5 apps.

AppBlock (Android)

Exposition: Pressuring of users due to other embodied desires

★ ★ ★ ★ ★ April 25, 2019



1

Uninstalling. With Free version I don't really enjoyed using this: 1. Too many ads; 2. Users can cheat by pausing the "STAY Focused" button; 3. Only premium users can set password, activate device admin. With free version, This app is almost useless compared to its competitors.

Stay Focused (Android)

Exposition: Pressuring of users due to other embodied desires

★★★★★ July 25, 2019



didn't know i have to pay to keep myself healthy.. it looks like a good app, but i refuse to pay just so i can lock apps at night. it may work, but i uninstalled it once i found out i had to pay.

Stay Focused (Android)

Exposition: Pressuring of users due to other embodied desires

★ ★ ★ ★ ★ February 10, 2019



2



The app requires permission to view contact names and all text written in messages. Why would you possibly need to see personal messages.

Offtime (Android)

Exposition: Inherent limits

- Incomplete binding
- Inability to comprehensively detect or correct circumventions
- Inability to allow legitimate overrides
- Instability
- Pressuring of users due to other embodied desires

Future implications

- Improved detection of circumventions through centralized identity management (e.g. 2FA)
- Digital group-control
- Digital other-control (parental control)
- Threats posed by vertical integration
- Minimal level of self-discipline needed

Ulysses' ropes and the inherent limits of digital self-control tools

Extended Abstract

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ABSTRACT

Millions of users install digital self-control tools (DSCTs) in order to limit their device usage. Previous inductive HCI research on DSCTs has shown that these tools are not always effective. However, it is unclear if these failures are inherent to DSCTs or merely incidental. In response, this analysis uses a deductive method to identify and classify the inherent limits of DSCTs. First, Homer's siren story from *The Odyssey* is presented as an ideal form of self-binding. The ideal self-binding strategies used by Ulysses are then contrasted with the actual self-binding opportunities afforded by DSCTs. This contrast highlights several inherent limits of DSCTs: incomplete binding, inability to comprehensively detect or correct circumventions, inability to allow legitimate overrides, instability, and pressuring of users due to other embodied desires. Further implications of this analysis include that users must maintain a minimal level of self-discipline for DSCTs to be effective, and that recognition of legitimate DSCT overrides may become possible by incorporating other individuals.

Author Keywords

Human-computer interaction; attention; self-binding; social media; behavioral intervention; digital wellbeing; addiction

1 ULYSSES' ROPES

Self-binding refers to a voluntary action by an individual that knowingly limits the individual's available actions at a later point [1]. An ideal form of self-binding is presented in *The Odyssey*, Homer's epic tale. After mentioning the deadly yet enchanting sirens, Odysseus (Ulysses) tells his crewmates:

"...I alone should hear their singing. Bind me, to keep me upright at the mast, wound round with rope. If I beseech you and command you to set me free, you must increase my bonds and chain me even tighter." [2]

Ulysses then plugs his crewmates' ears with wax. His crewmates tie him to the mast, and Ulysses listens to the sirens. After sailing past the sirens, Ulysses nods to his crewmates, and they remove the wax from their ears and untie him.

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2 DIGITAL SELF-CONTROL TOOLS

Digital self-control tools (DSCTs) are self-binding applications that constrain future usage of devices or specific applications. These tools are intended to align future behavior with present goals. DSCTs may be installed on a variety of platforms, including computers, web browsers, and mobile devices. Lyngs et. al [3] propose four general methods of digital self-control: blocking or removal of specific features, self-tracking, goal-enhancement, and reward/punishment. Specific examples of digital self-control include motivational quotes, blocking of web elements, and visualization of time spent [3].

Previous empirical research has employed user review analysis and semi-structured interviews to identify failure modes common to digital self-control tools [4,5]. However, these papers do not determine if the identified failures stem from inherent limits of DSCTs—or rather, if they are caused by incidental or temporary flaws.

3 EXPOSITION OF INHERENT LIMITS

In response, the following analysis illustrates inherent limits of digital self-control tools by method of contrast with the ideal case of Ulysses' ropes. I will elaborate on this analysis in the presentation; real-world examples of each limitation will be provided.

3.1 INCOMPLETE BINDING

Ulysses' self-binding is absolute: it is impossible for him to escape his ties.

Yet the constraints offered by digital self-control tools are inherently incomplete. Although some digital self-control tools are resistant to technical means of circumvention, even the most circumvention-resistant digital self-control tool is limited by its opt-in installation. A user may simply borrow a friend's device or use a public device if they wish to ignore the tool.

Both Williams and Elster [6,7] note that technologies may be represented on a continuum of constraint (perhaps from tools that "invite" to those that "demand.") Ulysses' ropes demand obedience. Yet digital self-control tools merely invite (with varying levels of emphasis) that the user complies. Increasingly restrictive digital self-control tools may engender increased circumvention instead of increased compliance.

3.2 INABILITY TO COMPREHENSIVELY DETECT OR CORRECT CIRCUMVENTIONS

Ulysses, enthralled by the sirens, attempts to break free from his bonds. He begs his crewmates to loosen him; instead, they tighten his ropes.

In contrast, digital self-control tools cannot comprehensively detect or correct attempts by users to circumvent imposed restrictions. This implicitly promotes avoidance behaviors: users may spend unlimited time attempting to circumvent restrictions, which may be as deleterious to the user's prior goals as time spent on the restricted action itself.

The social nature of user review systems also fosters the dissemination of circumvention strategies. These strategies (whether unintentionally or intentionally discovered) are often posted online, ostensibly to compel tool developers to remedy perceived flaws. However, these reviews simultaneously provide circumvention strategies to unsuspecting self-bound users. This causes a problem discovered by one user to quickly become a problem for many users. Further, these circumvention strategies are potentially innumerable (see subsection 3.1) and are not always remedied or able to be remedied.

3.3 INABILITY TO ALLOW LEGITIMATE OVERRIDES

Ulysses nods to his crew when the ship is out of earshot of the sirens. His companions recognize that the danger has passed, remove the wax from their ears, and loosen Ulysses' ropes.

Yet digital self-control tools cannot recognize when previously imposed self-binding restrictions should be legitimately overridden. This creates two related difficulties: a user may be unable to satisfy a legitimate need to override a restriction during the binding period, or the tool may become prohibitively difficult to uninstall. Both of these issues stem from the relative inability of the digital self-control tool to divine legitimate desire.

This deficiency is captured by Arendt's statement about technology and action [8]: "Violence can be justifiable, but it never will be legitimate." Arendt describes *legitimacy* as the inherent respect afforded to democratic human action. In other words, the inability of DSCTs to allow legitimate user overrides may be considered not merely a technical problem but a mark of the inherent inability of DSCTs to give or receive respect.

3.4 INSTABILITY

The mast to which Ulysses is tied is presented as a firm platform: this is necessary if his bonds are to remain secure.

Yet the systems upon which digital self-control tools rely are inherently unstable. Tool rights are not self-contained and must instead rely on frameworks set by operating systems or app stores. Tools may fail due to changes in the interfaces of the apps that they limit. Tool upgrades may also introduce unintentional external bugs. These uncertain qualities cause self-control tools to bind with less security than Ulysses' ropes. The practical consequence of this inherent reliance on external

systems is that DSCTs must take on increased risk. This risk may be passed to users in varying forms, including, among others, higher tool prices, greater likelihood of tool failure, or diminished tool capabilities.

3.5 PRESSURING OF USERS DUE TO OTHER EMBODIED DESIRES

Ulysses' ropes were meant for one purpose: to bind him to the mast of a ship.

Yet digital self-control tools do not have a sole purpose: rather, they embody the combined desires of tool users, tool designers, platform owners, and designers of restricted apps [cf. 1]. Even when DSCTs function as intended (cf. subsection 3.4), they are inherently subject to compromise on conflicts related to efficacy, privacy, payment, and advertising. Winner's statement about the concretization of political relations [9] appears prescient: "Certain technologies in themselves have political properties." In other words, self-control tools are not only a form of self-control: they are inescapably a form of control by others as well.

4 FURTHER IMPLICATIONS

A corollary of subsection 3.2 is that users of digital self-control tools must maintain the minimal self-discipline required to avoid seeking out circumvention strategies. The role of the digital self-control tool is simply to make long-term desires more prominent in the short-term. These tools cannot govern user behavior.

The inability of digital self-control tools to distinguish between legitimate and illegitimate overrides (see subsection 3.3) may be partially ameliorated by including other individuals through "digital group-control" (binding an entire social community) or "digital other-control" (parental control, password safekeeping). However, including other individuals does not necessarily ensure that detection or prevention of circumventions will be improved (see subsection 3.2).

ACKNOWLEDGEMENTS

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