

# Three Decades of Mustard Watches

Theory, Practice, and Frontiers

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je suis Nezorg

4 March 2022

## Three Decades of Mustard Watches

2022-03-04

- (introduce myself)
- will be a short talk, mostly to introduce the topic and invite a discussion on future directions of research in the topic

Three Decades of Mustard Watches  
Theory, Practice, and Frontiers

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# Theory

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- overview ringard's 1990 paper
- hope to build intuition through demonstration

*The paper introduces the concept of mustard watch, a common generalisation of the concepts of watch and of mustard pot.*

—Yann-Joachim Ringard

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## Three Decades of Mustard Watches

### └ Theory

#### └ Ringard's Revolution

1. unfortunately unpublished
2. can badly photocopy my copy if you want
3. motivations: what is point of time without having mustard?
4. speculation on how he thought it up: in a bistro, mustard pot was out, difficult to flag down a waiter, so he surveyed what he had on him...

# Ringard's Revolution

The paper introduces the concept of mustard watch, a common generalisation of the concepts of watch and of mustard pot. The main property of mustard watches is that they can deliver mustard in any desired quantity (theorem 1)

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- Theory

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# Ringard's Revolution

The paper introduces the concept of mustard watch, a common generalisation of the concepts of watch and of mustard pot. The main property of mustard watches is that they can deliver mustard in any desired quantity (theorem 1) and still display time with a precision of 30 seconds (theorem 2).

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Ringard's Revolution

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# Ringard's Revolution

*The paper introduces the concept of mustard watch, a common generalisation of the concepts of watch and of mustard pot. The main property of mustard watches is that they can deliver mustard in any desired quantity (theorem 1) and still display time with a precision of 30 seconds (theorem 2). But the real superiority of mustard watches over classical ones is expressed by our theorem 3: a mustard watch with no mustard in it is at least as precise as an ordinary one.*

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## Three Decades of Mustard Watches

- └ Theory

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Ringard's Revolution

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## Definition (mustard watch)

Let  $W$  be a classical watch; a *mustard watch* derived from  $W$  is any  $W'$  obtained from  $W$  by adding a certain amount of mustard in the mechanism.

## └ Theory

### └ Basic Notions

1. watch refers to mechanical wristwatch
2. (now give demonstration)
3. we now have a *proper* mustard watch – before it was degenerate

# Theorem 1

## Theorem (arbitrary mustard)

*It is possible to get “as much mustard as wanted” from a mustard watch. More precisely, given any amount  $m$  of mustard, there is a mustard watch  $W(m)$  containing mustard in quantity  $m$ .*

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### └ Theory

#### └ Theorem 1

1. proof: classical watches in any size; take large enough watch for  $m$  consider *completion* of it by adding mustard to it
2. I, among others, are not certain of this proof, considering Ringard's definition of “watch” as “analog pocket watch”; but let us go on

## Theorem 2

### Theorem (approximate conservation)

*A proper mustard watch can display time with a precision of 30 seconds.*

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## Three Decades of Mustard Watches

### └ Theory

#### └ Theorem 2

1. proof: let  $T$  be the current time. reset the watch so that it is within 30 seconds of  $T$ . this is possible because the seconds hand of a proper mustard watch is constant, and difference between two seconds values is always less than 30 seconds
2. there are some issues with this proof which ringard himself notes which i will get back to

Theorem 2

Theorem (approximate conservation)

*A proper mustard watch can display time with a precision of 30 seconds.*

## Theorem 3

### Theorem (superiority)

*There are mustard watches at least as precise as classical ones.*

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### └ Theory

#### └ Theorem 3

1. Ringard presents a proof using temporal logic  $\Omega 7.2$ , which, to be frank, I do not understand the minutiae of
2. However, the intuition is roughly that, for any given classical watch  $W$ , it is already a degenerate mustard watch; therefore such a mustard watch exists

## Theorem 4

Three Decades of Mustard Watches  
└ Theory

└ Theorem 4

1. foundational issues: theorem 2 proof depends on a metawatch
2. thus would require a predicative hierarchy of metawatches up to  $\omega$

## Theorem 4

### Theorem (degeneracy of self-metawatches)

*A mustard watch which is its own metawatch is degenerated.*

## Three Decades of Mustard Watches

### Theory

#### Theorem 4

1. foundational issues: theorem 2 proof depends on a metawatch
2. thus would require a predicative hierarchy of metawatches up to  $\omega$
3. proof intuition: Gödel's second incompleteness theorem
4. and yet still have decidability of properness! based on the fact that proper mustard watches are silent
5. (hold my mustard watch to my ear)

# Practice

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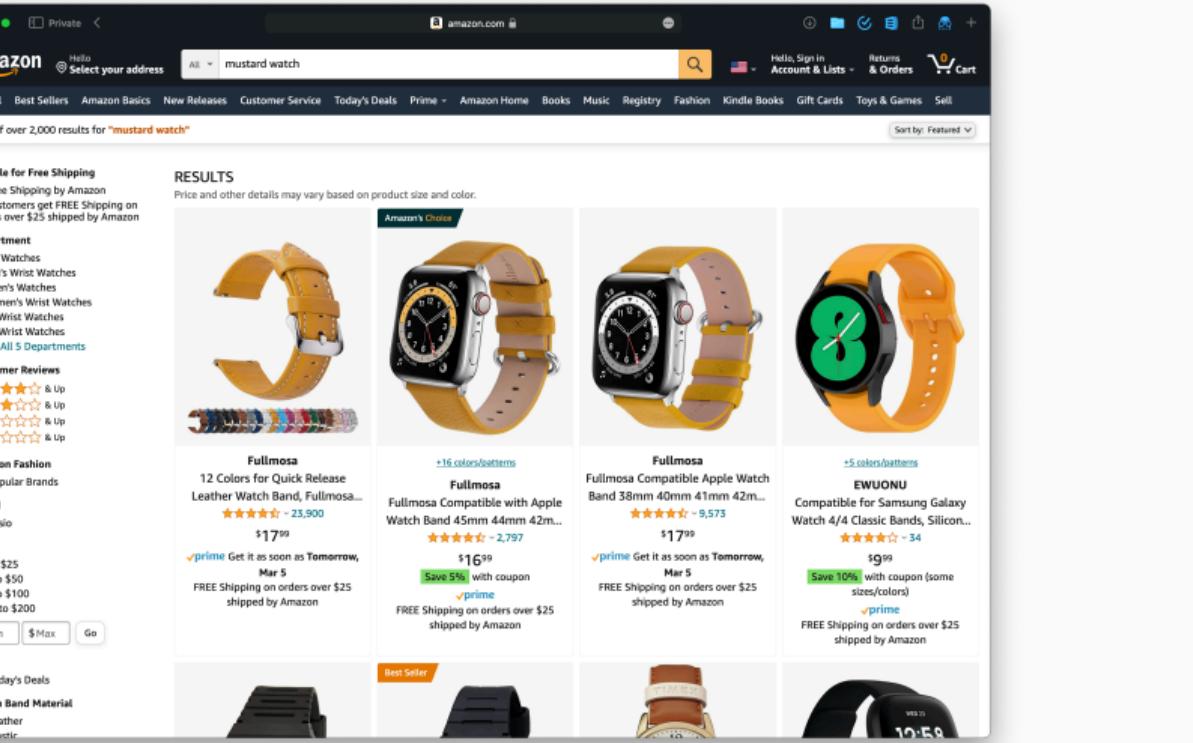
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└ Practice

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very brief, since I know plunch does not care about real-world adoption

Practice

## Limited Adoption

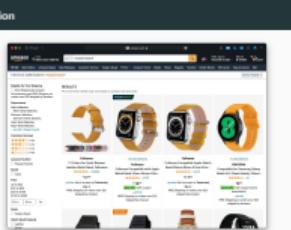


## Three Decades of Mustard Watches └ Practice

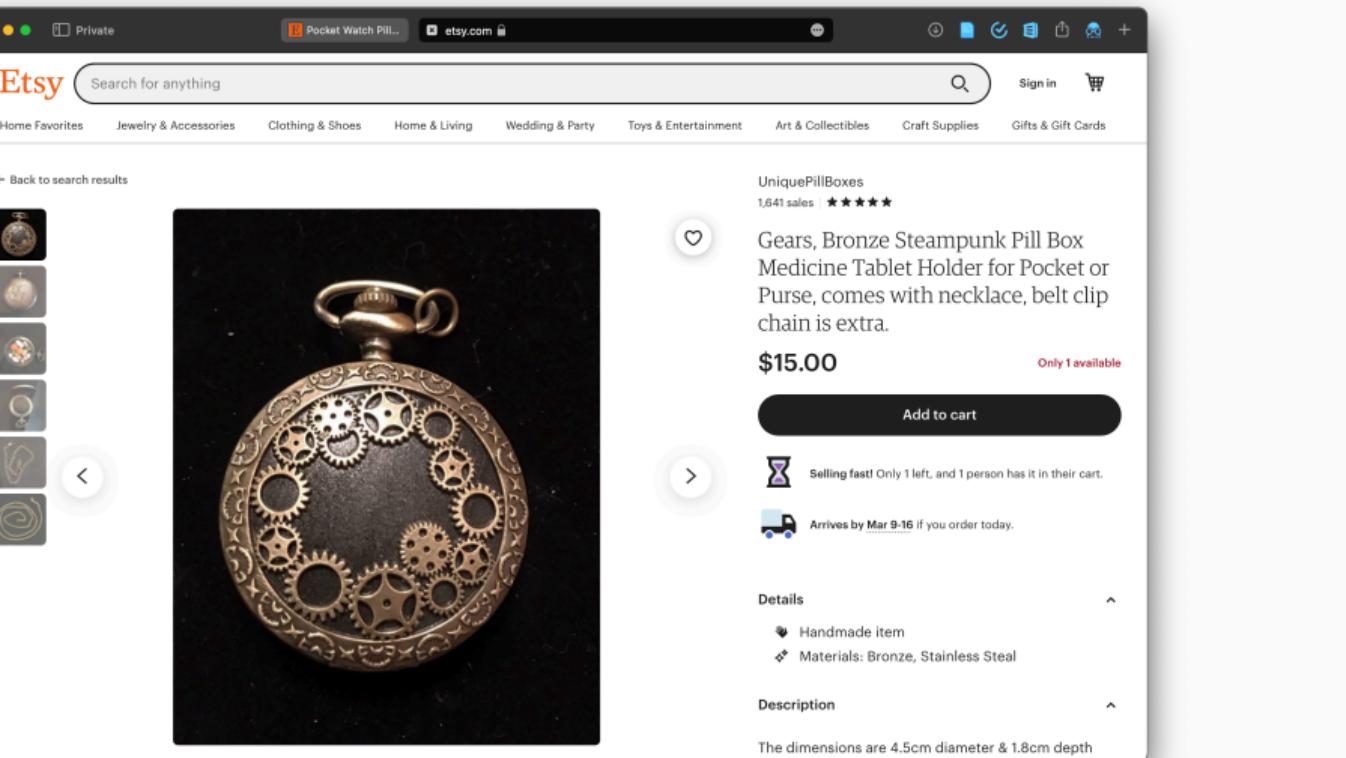
### └ Limited Adoption

1. unfortunately limited adoption in industry
2. search in the market turns up only ordinary watches with mustard-colored straps

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# Pill “Watch”

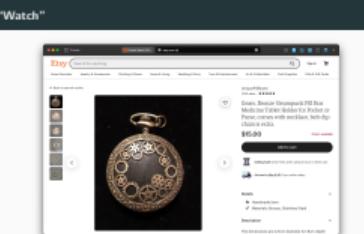


## Three Decades of Mustard Watches └ Practice

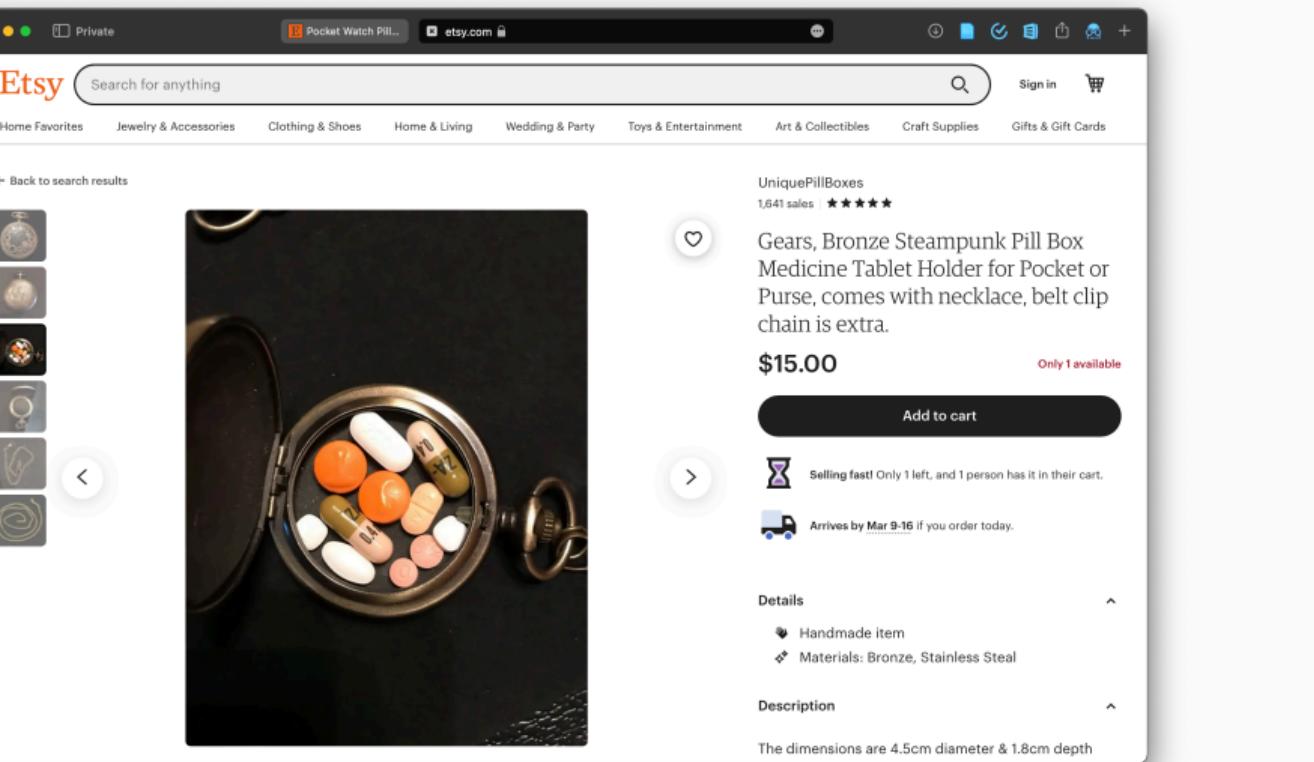
### └ Pill “Watch”

1. pill watch, seems inspired by mustard watch
2. initially seems promising

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# Pill “Watch”



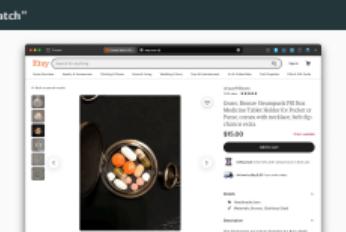
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## Three Decades of Mustard Watches

- Practice

- Pill “Watch”

1. ...but not actually a watch
2. violates the core principle of mustard watches, that it generalizes both!



# Frontiers

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└ Frontiers

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overview of some of the current research efforts into mustard watches

Frontiers

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- 2022-03-04
1. Ringard mentions ketchup watches are clearly ridiculous because you would need too much ketchup, but what about others?

# Beyond Mustard



2022-03-04

## Three Decades of Mustard Watches

- Frontiers

- Beyond Mustard

1. Ringard seems to assume a smooth Dijon mustard for some of his constructions – it is not clear how to fit whole grain mustard into the hole of a mustard watch
2. (demonstrate whole grain mustard)
3. I am currently working on this



Beyond Mustard

# Beyond Mustard



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└ Frontiers

└ Beyond Mustard

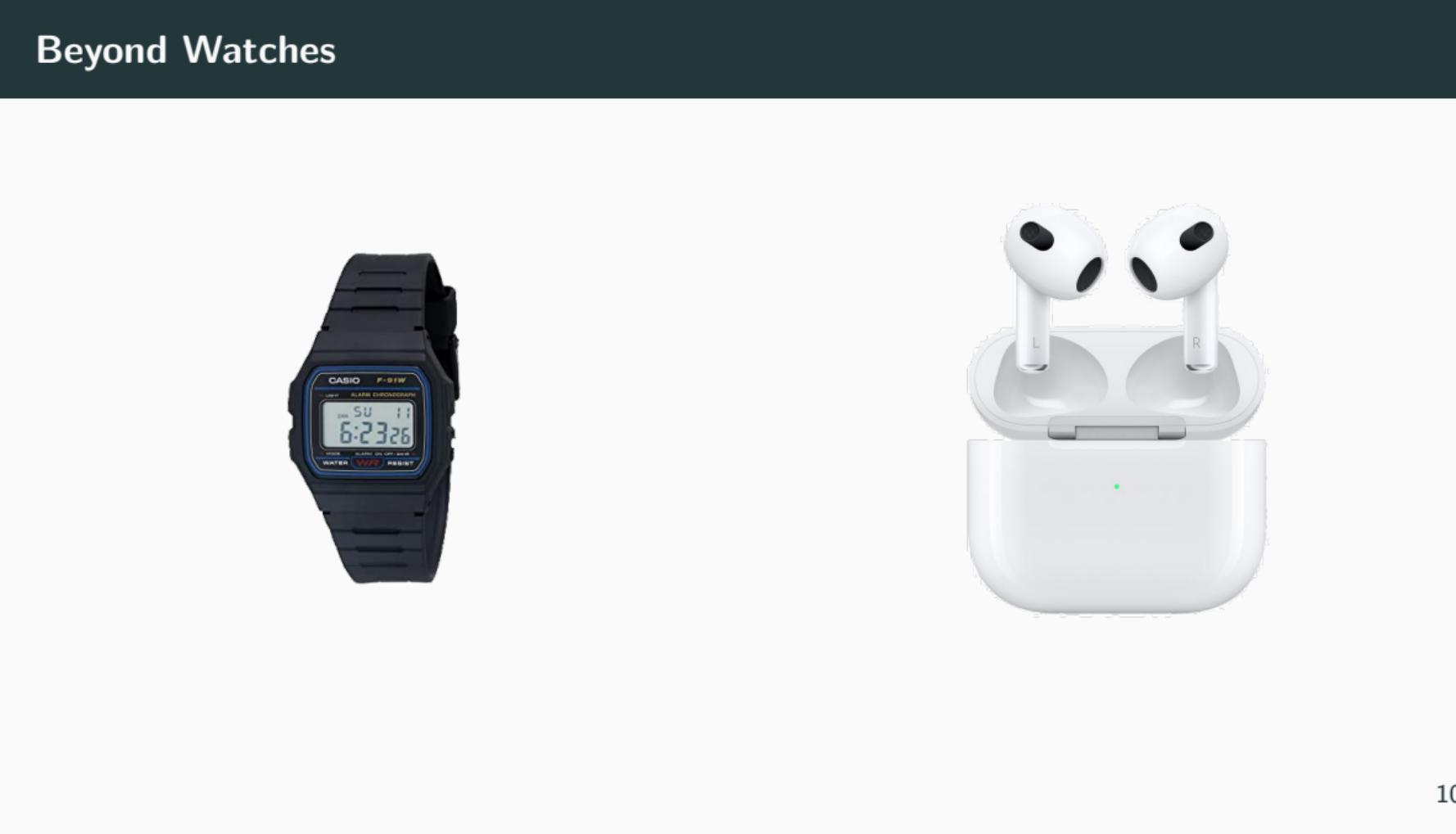
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Beyond Mustard







Three Decades of Mustard Watches

- Frontiers
- Beyond Watches

2022-03-04

Beyond Watches

# Beyond mustard watches?

Three Decades of Mustard Watches  
└ Frontiers

Beyond mustard watches?

- 2022-03-04
- Most in the spirit of Ringard, though, would to be generalize even further, on a third axis!
  - discussion?