What's that thing for?

Jesse Hughes

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Outline



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Outline







3 Adding intentionality and norms

Outline



2 Features of instrumental functions



Three questions

Why is it there?



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Hughes What's that thing for?

Three questions

Why is it there?

How does it contribute?



Three questions

Why is it there?

How does it contribute?

How does one use it?



Three questions

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How does it contribute?

How does one use it?



Why is it there?

• How come kittens have hearts?



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- How come kittens have hearts?
- Why do people make carburetors?



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- Why are staplers so common?



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Aim: to explain the presence, prevalence or persistence of the function-bearer.



Why is it there?

- How come kittens have hearts?
- Why do people make carburetors?
- Why are staplers so common?

Aim: to explain the presence, prevalence or persistence of the function-bearer.

Strategy: examine the history.



My stapler's family tree

Fastening papers accounts for reproductive success.



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Fastening papers accounts for reproductive success.

But do we gain practical information from this account?



My stapler's family tree

Fastening papers accounts for reproductive success.

But do we gain practical information from this account?

Historical accounts do not yield clear practical consequences.



How does it contribute?

• How does a heart contribute to the circulatory system?



How does it contribute?

- How does a heart contribute to the circulatory system?
- How does a carburetor help a car go?





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Aim: to explain a system capacity in terms of the capacities of its parts.

Strategy: Identify the system and capacity and analyze in terms of its parts.





Prevailing theories of functions Features of instrumental functions

Adding intentionality and norms

My stapler in context



The Man-Stapler-Paper system has the capacity to produce stapled papers.

My stapler in context



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(To be fair: not much of a scientific explanation!)

My stapler in context



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Clearly not the way to answer "How does one use it?"

How does one use it?

Historical and System Capacity accounts do not provide clear practical consequences.

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Goal: Give an account of artifact functions that yield data for practical deliberations.

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Goal: Give an account of artifact functions that yield data for practical deliberations.

Instrumental functions: functions that produce means-end relations.

Outline



2 Features of instrumental functions



3 Adding intentionality and norms

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Four questions



To produce reliable answers for "How does one use it?" we must answer four questions.

• What is the aim?

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Four questions



To produce reliable answers for "How does one use it?" we must answer four questions.

- What is the aim?
- What should one do with it?
- When and where should it be used?
- What function-bearing type is it?

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What is the aim?



Functions aim at some end or goal, the functional goal.



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Staplers are for fastening papers. Goal: Fasten(x)

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Functions aim at some end or goal, the functional goal.

Staplers are for fastening papers. Goal: Fasten(x)

Udders are for getting milk. Goal: HaveMilk

Dryers are for drying hair quickly. Goal: HaveDryHairSoon(x)

What should one do with it?

Houkes & Vermaas's great insight:

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To know how to use an artifact, you must know how to use it.

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When and where should it be used?



Contexts of use specify expectations regarding location, conditions, objects, user.

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When and where should it be used?



Contexts of use specify expectations regarding location, conditions, objects, user.

- They specify situations in which the artifact should work.
- They provide parameters for use plan and goal.
- They allow for context-dependent success.

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What function-bearing type is it?

Functions apply to types primarily.



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Restrictions:

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- Must be narrow enough to share goal, use plan, context specs.
- Must not be so narrow that it excludes tokens of the same design.







From functions to means

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Component	Туре	Variable
Functional goal	propositional function	φ
Use plan	action prescription	lpha
Context specification	set of use situations	С
Artifact type	design-based type	Т

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A function is identified by the tuple (φ , α , C, T).

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Tentative conclusion (ME)

The instrumental function (φ , α , C, T) entails that, in *C*-situations, doing α with a *T*-token is a means to φ .

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Outline





3 Adding intentionality and norms

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Capabilities and purposes

$$(\varphi, \alpha, C, T) \xrightarrow{\text{entails}} \langle \alpha \rangle \varphi$$

function

means-end



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Practical consequences revisited

Functions to means (ME)

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In the right circumstances, a T-token will produce the desired results.

Practical consequences revisited

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But not all *T*-tokens are equal!



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But not all *T*-tokens are equal!

Malfunction is an essential feature of instrumental functions.



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Practical consequences revisited

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Fix: Amend (ME)!





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Accidentally trivial?





Image: A □ > A

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Fix: Amend (ME)!

Accidentally trivial? (Of course not!)





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Instrumental functions defined (really!)

Tentative characterization (IF)

The function ascription (φ , α , C, T) is true iff

- in C-situations, doing α with a normal T-token is a means to φ ,
- normal *T*-tokens are physically possible and
- this capacity is valued by some causally relevant person(s).
- A type has a function only if it can do what it should.

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- normal *T*-tokens are physically possible and
- this capacity is valued by some causally relevant person(s).
- A type has a function only if it can do what it should.
- Normal tokens have clear practical consequences:

If I believe (φ, α, C, T) and that t is a normal T-token, then I should believe that using t is a means to φ

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Malfunction and failure

Definition: An application <u>fails</u> when the goal φ is not realized.

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Common definition: A token <u>malfunctions</u> when it cannot do what it is supposed to do.

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Unanalyzed!

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Cannot do: possibly, probably, regularly?

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Our definition: A token <u>malfunctions</u> when it is less reliable or effective in some contexts of use than a <u>normal</u> token of the same type.

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Clearly normative!
Beliefs about normal tokens

One's beliefs about normality come from a number of sources.

• Users gain experience from use.



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- Users gain experience from use.
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- Users infer the designers' intentions.
- Engineers have technical understanding.

This data creates expectations about how tokens ought to perform.

Normal tokens are a useful device for presenting these expectations.



What are instrumental functions for?





• Clarify the functional knowledge that produces practical consequences.

Function claims \implies Practical norms

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• Characterize instrumental function ascriptions.

What are instrumental functions for?





• Clarify the functional knowledge that produces practical consequences.

Function claims \implies Practical norms

- Characterize instrumental function ascriptions.
- Introduce normal tokens in order to
 - limit practical expectations,
 - distinguish failure from malfunction and

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• justify the normative nature of malfunction claims.

Thank you!

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