Hansson (2018): Formal Investigations of Value

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Overview

Background

Sven-Ove Hansson (*1951, Royal Institute of Technology, Stockholm) has worked in various areas, but most of his publications are in formal ethics. He has published seminal work on preference logics, values, deontic logic, and belief revision. For example: *Defining 'good' and 'bad' in terms of 'better than'* (1990), *A Textbook of Belief Dynamics* (1999), *The Structure of Values and Norms* (2001).

Formal Investigations of Value (2018) is a brief overview. The volume was originally conceived as a handbook, but over the years turned into an *Introduction to Formal Philosophy*.

A General Remark about this Type of Work

The following reflects my own opinion and I do not know whether Hansson agrees:

- Philosophical logicians and philosophers who use mathematical tools do not customarily 'formalize' theories.
- They rather formulate principles that are compelling at first sight and then take a look at how these cohere and what consequences they have. They also often look for a minimal set of principles.
- 'Technical' and 'formal' considerations inform philosophical theories and, vice versa, philosophical stances constrain and motivate the formulation of exact principles.
- Hansson: "[W]e have expectations that our value statements should cohere with each other." (p. 500)

Autonomy of Values, Facts, and Norms

- Facts *is* – Norms *ought* – Values *good*, *better than*.
- Facts, norms, and values belong to different categories.
- *ought* cannot be defined from *is* (presumption that there is a naturalistic fallacy).
- Norms cannot be defined from values and values cannot be defined from norms.
- Definability: a form of intensional equivalence.
- Determinability: mere extensional equivalence.
- Thesis: Norms are *determinable* from values and some values are determinable from norms, but norms and values are not *interdefinable*.

Important Distinctions

- Subject: idealized rational agents
  - sth. is good/better *according to* a person ≈ the person prefers this
  - sth. is good/better *for* a person
- Object: (implicit) comparison class
  - *Emma is a very good sprinter* relative to local running group vs. Olympic Games
  - Mutual exclusivity: *{dog owner, cat owner}* vs. *{dog owner but not cat owner, cat owner but not dog owner, both dog and cat owner, neither a dog owner nor a cat owner}*
  - Types of entities: primitive, goods, propositions, ...
- Evaluative viewpoint: e.g. best car on sale ≠ best car *for me*
  - Distinction by goal: morally good vs. economically good
  - Category of evaluated object: good pianist but bad driver
  - Synoptic value: good/best all things considered, 'overall betterness'

Three Types of Value Concepts

- Classificatory: *good*, *best*, *very bad*, *almost worst*, ...
- Comparative: *better than*, *worse than*, *equal in value to*
- Quantitative: value functions, utility functions

Common notation: Gx: x is good; Bx: x is bad; $\geq$ and R: at least as good as; $>$ and P: better than; $\sim$ and I: equally good as.

Comment: Instead of '$>$' and '$\geq$' it is common to use '$\succ$' and '$\succeq$', to make it clear that these do not mean 'greater than' and 'greater than or equal'. I will do that from now on.

Classificatory Value: good, bad

- Mutual exclusiveness: $\neg(Gx \,\&\, Bx)$
- Non-duplicity: $\neg(Gp \,\&\, G\neg p)$, $\neg(Bp \,\&\, B\neg p)$

Hansson argues that $Gp \rightarrow B\neg p$ and $Bp \rightarrow G\neg p$ do *not* hold (p. 508). For example, *It is good that Sven Ove gives a recording of Bach to his uncle for his birthday* does not imply *It is bad that Sven Ove does not give a recording of Bach to his uncle for his birthday.*

Comparison Classes

- $G_A x$: x is good among the elements of A.
- Non-reversal (van Benthem 1982): If $G_A x \,\&\, \neg G_A y$, then there is no D s.t. $G_D y \,\&\, \neg G_D x$. (likewise for *bad*)
- Difference conditions make similar postulates for subsets and supersets of comparison classes (see p. 509).

Remark: The postulates are fairly strong. Are there counter-examples?

Connection to Comparative Values

- Negation sensitivity of *good*: $Gx \,\&\, \neg Gy \rightarrow x \succ y$
- Negation sensitivity of *bad*: $\neg Bx \,\&\, By \rightarrow x \succ y$
- Closeness: $x \succ y \rightarrow Gx \vee By$
- Positivity of *good*: $Gx \,\&\, y \succeq x \rightarrow Gy$
- Negativity of *bad*: $Bx \,\&\, x \succeq y \rightarrow By$
- Continuity of *good*: $Gx \,\&\, Gz \,\&\, x \succeq y \succeq z \rightarrow Gy$
- Continuity of *bad*: $Bx \,\&\, Bz \,\&\, x \succeq y \succeq z \rightarrow By$
- Indifference-sensitivity of *good*: $Gx \,\&\, x \sim y \rightarrow Gy$
- Indifference-sensitivity of *bad*: $Bx \,\&\, x \sim y \rightarrow By$

Quantitative Value: Scale Types 1 (Stevens 1946)

Ordinal Scale

Only represents a ranking. In finite domains and countably infinite domains it can be derived without further conditions from *better than* and *equally good*. If $u(x)$ is on an ordinal scale, then $v(x) = F(u(x))$ represents the same ordinal scale if $F(x)$ is monotonically increasing, i.e., if $x > y$ implies $F(x) > F(y)$.

Example: The functions $u(x) = 9x^2 + 24x + 16$ and $v(x) = 3x + 4$ for positive x represent the same ranking of items on an ordinal scale, because $v(x) = \sqrt{u(x)}$ for positive x, and $\sqrt{x}$ is monotonically increasing for $x > 0$.

Quantitative Value: Scale Types 2 (Stevens 1946)

Interval Scale

Comparisons like $u(a) - u(b) > u(c) - u(d)$ are meaningful, but ratios are not meaningful. For example, temperature in degree Celsius and in Fahrenheit are on interval scales. If $u(x)$ is on an interval scale, then $v(x) = a \cdot u(x) + b$ represents the same interval scale.

Example: The following translation is meaningful: *A 2 °C warming until the year 2100 leads to 10cm higher sea levels.* = *A 3.6 °F warming until the year 2100 leads to 10cm higher sea levels.* Conversion: $F(x) = 1.8 \cdot C(x) + 32$. For differences you only use the factor. The 0-points are mere conventions.

Quantitative Value: Scale Types 3 (Stevens 1946)

Ratio Scale

Ratios are meaningful and the zero point of the scale is meaningful. For example, length and temperature in Kelvin are measured on ratio scales. Any proportionality transformation $v(x) = k \cdot u(x)$ for positive constant k represents the same as $u(x)$ on a ratio scale.

Example: A person 178cm tall is about 5.84 feet tall, 1 cm = 0.0328084 foot. Note: 0 cm = 0 feet = 0 kilometer = 0 lightyear length. A length of 0 is very special.

"For the purposes of a utilitarian moral theory a ratio scale will be necessary." (p. 510) *Wishful thinking?*

Brogan (1919): negation-related good

- Gp iff. $p \succ \neg p$
- Bp iff. $\neg p \succ p$

Accepted by many such as Mitchell, Halldén, Åqvist. However, it violates positivity if $\succ$ *is based on some of the non-standard better than relations Hansson considers (Hansson 2001: pp. 118–125).*

von Wright (1972): contradiction-related good

- Gp iff. $p \succ \bot$
- Bp iff. $\bot \succ p$

Too technical, hard to understand.

Chisholm & Sosa (1966): indifference-related good

good p = p is better than neutral
bad p = p is worse than neutral
neutral p: $p \sim \neg p$

- Gp iff. $\exists q(p \succ q \sim \neg q)$
- Bp iff. $\exists q(\neg q \sim q \succ p)$

Very influential account. However, their definitions violate positivity, exclusiveness and non-duplicity for many of the better than relations investigated in Hansson (2001).

Hansson (1990): canonical good

- Gp iff. $\forall q(q \succeq^* p \rightarrow q \succ \neg q)$
- Bp iff. $\forall q(p \succeq^* q \rightarrow \neg q \succ q)$

where $p \succeq^* q$ is true if $p \succeq q$ or there are $r_1, \ldots, r_n$ such that $p \succeq r_1 \succeq \cdots \succeq r_n \succeq q$.

Satisfies the properties mentioned for good and bad as long as $\succeq$ *is reflexive (Hansson 2001: pp. 121-2).*

Deriving Comparatives from Classificatory Value

1. Goodness-based preference: $x \succ y$ iff. $G_{\{x,y\}}x \;\&\; \neg G_{\{x,y\}}y$
2. Badness-based preference: $x \succ y$ iff. $B_{\{x,y\}}y \;\&\; \neg B_{\{x,y\}}x$

Problem: Assume $\{x, y\}$ as comparison set in all cases.

Scenario 1	Scenario 2
$Gx \;\&\; \neg Bx$ $\neg Gy \;\&\; \neg By$	$\neg Bx \;\&\; \neg Gx$ $By \;\&\; \neg Gy$
Def. 1: $x \succ y$ Def. 2: $\neg(x \succ y)$	Def. 1: $\neg(x \succ y)$ Def. 2: $x \succ y$

The first scenario suggests the first definition, the second scenario suggests the second definition!

Hansson's Solution

The solution is to combine the two definitions disjunctively to cover both cases:

- $x \succ y \Leftrightarrow G_{\{x,y\}}x \,\&\, \neg G_{\{x,y\}}y$ or $B_{\{x,y\}}y \,\&\, \neg B_{\{x,y\}}x$
- $x \sim y \Leftrightarrow G_{\{x,y\}}x \leftrightarrow G_{\{x,y\}}y$ and $B_{\{x,y\}}x \leftrightarrow B_{\{x,y\}}y$

Remark: Shouldn't these definitions be based on larger sets containing x and y? I'm not sure.

Relation Between Quantitative and Comparative Value

Representation Theorems

Representation theorems relate the comparative relations with numerical representations such as utility functions.

$$v(x) > v(y) \text{ iff. } x \succ y \tag{1}$$

Indiscriminability and Interval Orders

Constant-threshold numerical representation:

$$x \succ y \text{ iff. } v(x) - v(y) > \delta \text{ where } \delta \text{ is a positive real number} \quad (2)$$

If that is the case, then '$\succ$' is not an ordinary *better than* relation. It has the following properties:

$$\text{Semi-Transitivity:} \quad x \succ y \succ z \rightarrow (x \succ w) \vee (w \succ z) \quad (3)$$

$$\text{Interval Order Property:} \quad (x \succ y) \,\&\, (z \succ w) \rightarrow (x \succ w) \vee (z \succ y) \quad (4)$$

Quantified and Classificatory Value

- Gp iff. $v(p) > v(\neg p)$
- Bp iff. $v(\neg p) > v(p)$

Problem: These definitions may violate positivity and negativity.

Choice and Value

- According to Hansson, choices and values do not belong to the same category.
- Values are not defined by choices.
- Values constrain rational choices,e.g. if $p \succ \neg p$ then it would be strange to choose $\neg p$.

Choice Functions

A *choice function* C is a function from sets to sets such that $C(A) \subseteq A$ if A is not empty. Rationality properties are defended for choice functions, such as the Chernoff Property: If $A \subseteq B$, then $A \cap C(B) \subseteq C(A)$.

Translating back and forth:

- $C(A) = \{x \in A \mid \forall y \in A : x \succeq y\}$
- $x \succeq y$ iff. $x \in C(\{x, y\})$

Although we can translate back and forth from relations to choice functions, choice functions are sometimes used in the philosophical literature for justifying or modeling contextual variations. For example, Voorhoeve (2013) uses choice functions to tackle Temkin's Spectrum Cases.

Norms and Values: Deontic Operators

- P: permitted, e.g. *It is permitted to enter the lawn.*
- F: forbidden, e.g. *It is forbidden to smoke in bars.*
- O: obligatory, e.g. *It is obligatory to pay income tax.*

Hansson (p. 520): There are good arguments for the thesis that no prescriptive predicate can be equivalent with any positive value predicate.

Norms and Values: General Problem

- We may 'connect' P with a positive value predicate and F with a negative value predicate.
- Example: Fp iff. Bp, i.e. *doing p is forbidden iff. doing p is bad*
- This does not work in general, because there are cases of permissive ill-doing.
- Example: "Minor acts of discourtesy which most of us feel have a right to perform [...]." (Chisholm & Sosa 1966)

Questions

Questions to myself and the audience:

1. What *is* the relation between norms and values?
2. What about conflicting values / moral dilemmas? Do you think there is a synoptic *good, all things considered*?
3. How are (sub-)values aggregated? – Hansson does not address this question in this overview.
4. Where do the rationality principles for values 'come from'? What guarantees their coherence / harmony between them?
5. What is the relation between prudential values, moral values, aesthetic values, and so on?
6. What's your take on the alleged autonomy of facts, values, and norms?

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