

About Reality and Design

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Where innovation starts

Definition of Realism



- **re-al-ism** [ree-uh-liz-uhm] [Origin: 1810–20; real + -ism; cf. F réalisme]
- **–noun**
 - 1. interest in or concern for the actual or **real**, as distinguished from the **abstract**, **speculative**, etc.
 - 2. the tendency to view or represent things as they **really** are.
- 3. **Fine Arts.**
 - a. treatment of forms, colors, space, etc., in such a manner as to emphasize their correspondence to actuality or to ordinary visual experience.
 - b. a style of painting and sculpture developed about the mid-19th century in which figures and scenes are depicted as they are experienced or might be experienced in everyday life.
- 4. **Literature.**
 - a. a manner of treating subject matter that presents a careful description of everyday life, usually of the lower and middle classes.
 - b. a theory of writing in which the ordinary, familiar, or mundane aspects of life are represented in a straightforward or matter-of-fact manner that is presumed to reflect life as it actually is.
- 5. **Philosophy.**
 - a. the doctrine that universals have a real objective existence.
 - b. the doctrine that objects of sense perception have an existence independent of the act of perception.



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Definition of Abstract



ab·stract

Origin: 1400–50; late ME: withdrawn from worldly interests < L *abstractus* drawn off

—adjective

1. thought of apart from concrete realities, specific objects, or actual instances: *an abstract idea*.
2. expressing a quality or characteristic apart from any specific object or instance, as *justice, poverty, and speed*.
3. theoretical; not applied or practical: *abstract science*.
4. difficult to understand; abstruse: *abstract speculations*.
Fine Arts.
- a. of or pertaining to the formal aspect of art, emphasizing lines, colors, generalized or geometrical forms, etc., esp. with reference to their relationship to one another.
- b. (often initial capital letter) pertaining to the nonrepresentational art styles of the 20th century.

—noun

6. a summary of a text, scientific article, document, speech, etc.; epitome.
7. something that concentrates in itself the essential qualities of anything more extensive or more general, or of several things; essence.
8. an idea or term considered apart from some material basis or object.
9. an abstract work of art.

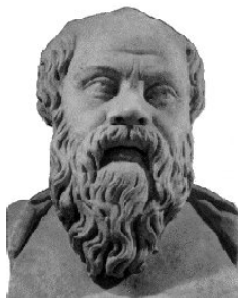
—verb (used with object)

10. to draw or take away; remove.
11. to divert or draw away the attention of.
12. to steal.
13. to consider as a general quality or characteristic apart from specific objects or instances: *to abstract the notions of time, space, and matter*.
14. to make an abstract of; summarize.

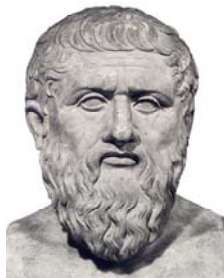
—Idioms

15. **abstract away from**, to omit from consideration.
16. **in the abstract**, without reference to a specific object or instance; in theory: *beauty in the abstract*.

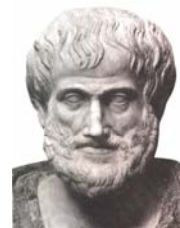
Socrates → Plato → Aristotle



Socrates
(469 BC–399 BC)




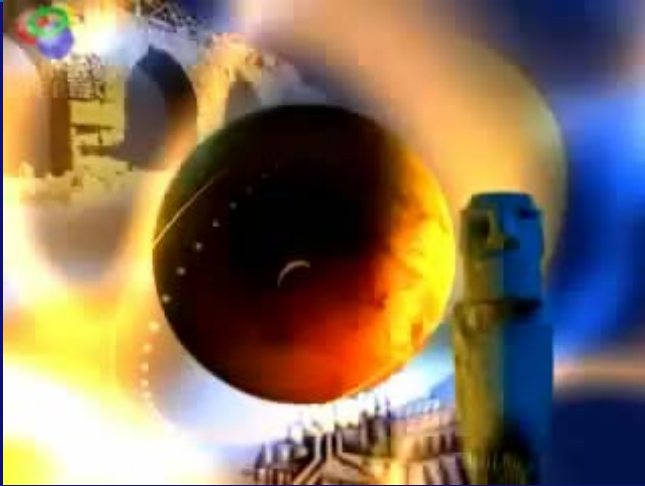
Aristocles [Plato]
(427 BC–347 BC)



Aristotle
(384 BC–322 BC)

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Plato's Life




Plato

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What's Plato's view on Reality?





Plato

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The Cave Allegory

Plato

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So, what can we be certain of?







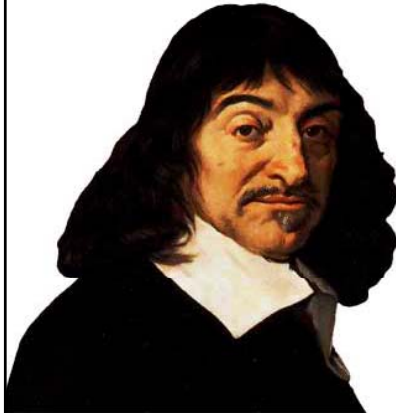
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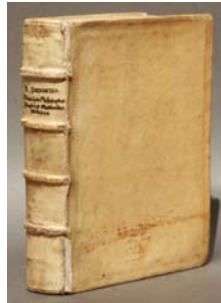
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“Cogito ergo sum”

“I think, therefore I am.”



René Descartes (1596–1650)

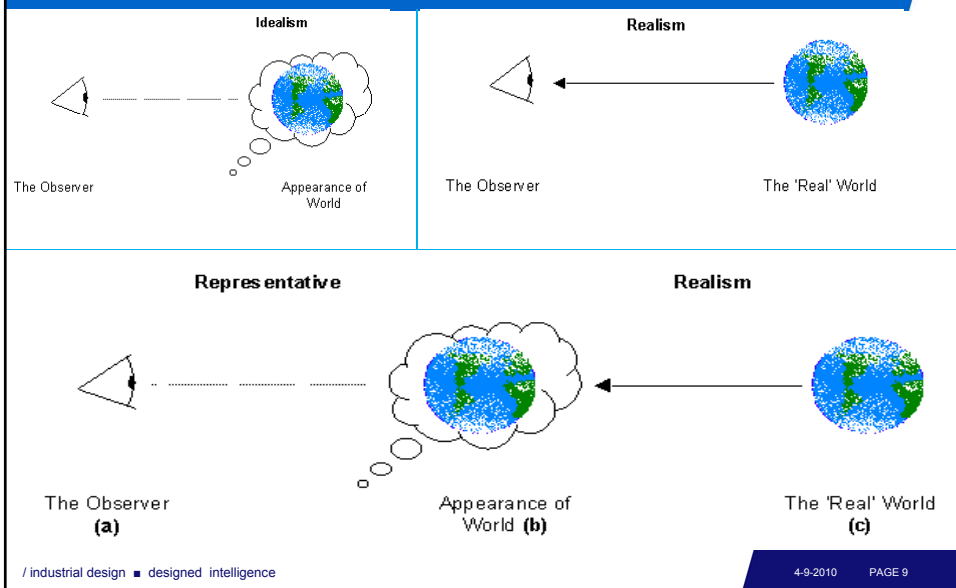


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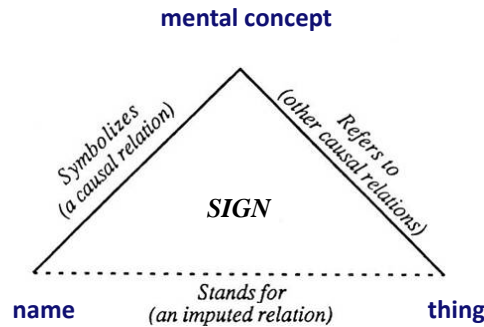
Theories about Reality



The Semiotic Triangle



Charles Sander Peirce



"A sign, or *representamen*, is something which stands to somebody for something in some respect or capacity. It addresses somebody, that is, creates in the mind of that person an equivalent sign, or perhaps a more developed sign. That sign which it creates I call the *interpretant* of the first sign. The sign stands for something, its *object* [or referent]. It stands for that object, not in all respects, but in reference to a sort of idea, which I have sometimes called the *ground* of the *representamen*." (Peirce, 1931-1958, vol. 2, p. 228)

REF: Ogden, C. K., I. A. Richards, B. Malinowski and F.G. Crookshank(1923). The Meaning of Meaning: A Study of the Influence of Language Upon Thought and of the Science of Symbolism. London: Routledge & Kegan Paul.

REF: Peirce, C. S. (1931-1958). Collected Papers of C. S. Peirce ed. by C. Hartshorne, P. Weiss, & A. Burks, 8 vols., Harvard University Press, Cambridge, MA.

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What is a Name?



Lao Tzu

**The Tao that can be spoken of is not the eternal Tao.
The name that can be named is not the eternal name.**

**The nameless is the beginning of heaven and earth.
The name is the mother of the ten thousand things.**

**Send your desires away and you will see the mystery.
Be filled with desire
and you will see only the manifestation.**

"In the beginning was the Word, and the Word was with God, and the Word was God. He was in the beginning with God. All things were made through Him, and without Him nothing was made that was made. In Him was life, and the life was the light of men. And the light shines in the darkness, and the darkness did not comprehend it." John 1:1-5

REF: Lao Tzu (400 BC) translated by Tolbert McCarroll
<http://www.owlnet.rice.edu/~laotzu/text/thetao.txt>

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Critique of Pure Reason



Immanuel Kant

Quantity	Quality
Unity	Reality
Plurality	Negation
Totality	Limitation
Axioms of Intuition	Anticipations of Perception
Relation	Modality
Substance	Possibility
Cause	Existence
Community	Necessity
Analogies of Experience	Postulates of Empirical Thought

REF: Kant, I. (1781) Kritik der reinen Vernunft.

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The Method of Science



René Descartes

- **The four precepts**
 1. Filter away all that may be in doubt. 2. Divide difficulties to as small pieces as necessary.
 3. Start with the simplest problems. 4. Make Lists, Tables, Diagrams.
- Quotation from *Discourse on Method* (1637)
- "The first was never to accept anything for true which I did not clearly know to be such; that is to say, carefully to avoid precipitancy and prejudice, and to comprise nothing more in my judgment than what was presented to my mind so clearly and distinctly as to exclude all ground of doubt.
- The second, to divide each of the difficulties under examination into as many parts as possible, and as might be necessary for its adequate solution.
- The third, to conduct my thoughts in such order that, by commencing with objects the simplest and easiest to know, I might ascend by little and little, and, as it were, step by step, to the knowledge of the more complex; assigning in thought a certain order even to those objects which in their own nature do not stand in a relation of antecedence and sequence.
- And the last, in every case to make enumerations so complete, and reviews so general, that I might be assured that nothing was omitted."

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“But life is short, and truth works far and lives long...”



Arthur Schopenhauer



“Time Saving Truth from Falsehood and Envy”
François Lemoyne, 1737

	Ontological Reference		
	<i>Real Being</i>	<i>Formal Being</i>	<i>Ideal Being</i>
Epistemo-logical Method	Observation of Reality	Formal proof	Belief based on intuition
Inference Concept	Inductive logic	Deductive logic	Value system
Academic Paradigm	Natural Sciences	Mathematics	Humane Sciences

Scientific Research

Nomothetic research (in natural sciences and engineering): the aim is to find general causal laws to explain phenomena, theories are usually axiomatic (deductive) systems or sets of models.

Constructive research (in engineering and design): the solution of the problem is not only shown to exist but it is also constructed.

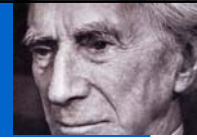
Idiographic (ideographic) research trying to provide all possible explanations of a particular case, for example in history.

Action research (in design sciences): the problem is solved by certain actions whose consequences are evaluated and new actions are specified (iterative improvement, trial and error).

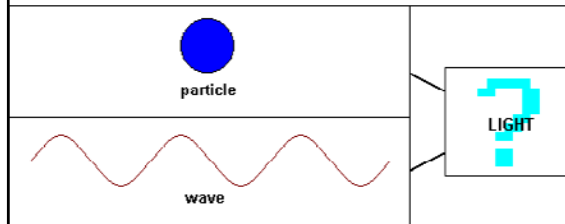
Case study (in design sciences): an in-depth, longitudinal examination of a single instance or event, which is called a case.

Questionnaire study (in social sciences): a series of questions are used for the purpose of gathering information, which is usually analyzed statistically.

Objects and Processes



Bertrand Russell



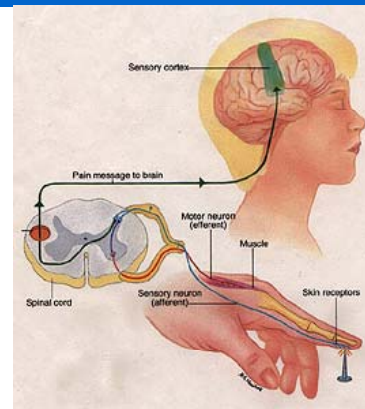
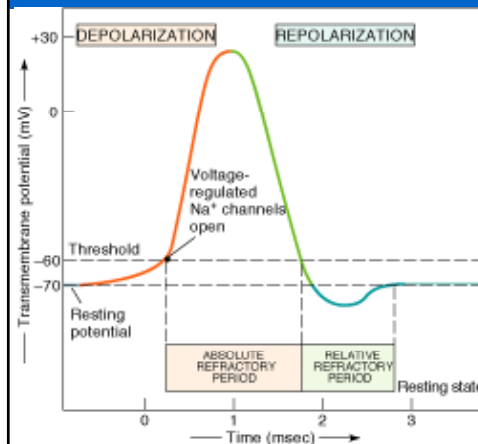
How to imagine the wave-particle duality.



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How Close can We get to Reality?



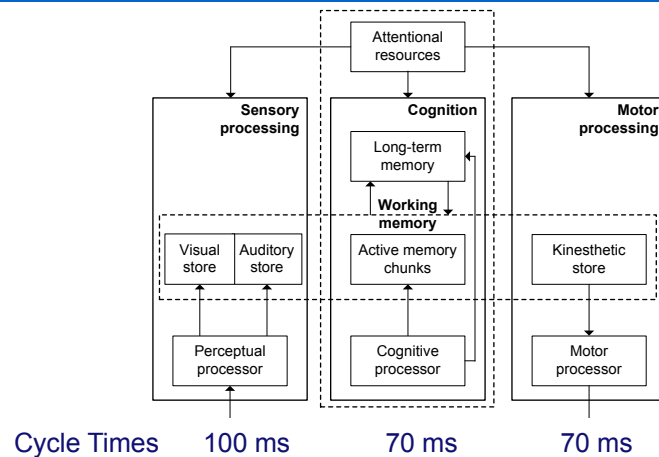
Reflex-Reaction cycle \approx 20 - 100 ms

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Perceive-Recognize-Act Cycle



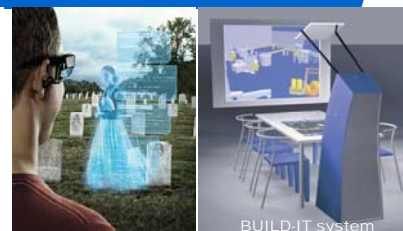
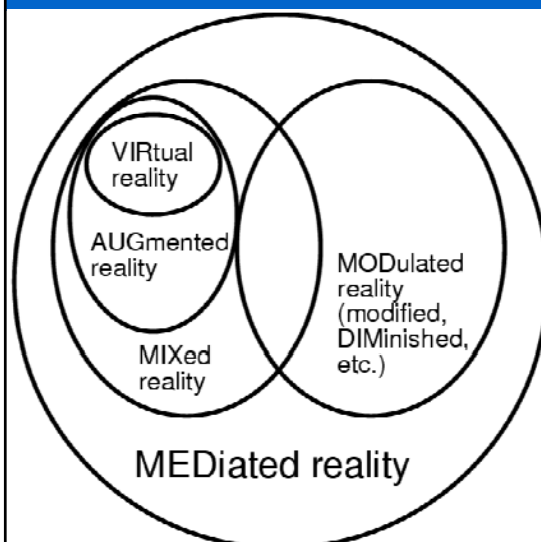
Perceive-Recognize-Act cycle \approx 240 ms

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Reality Substitutes



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How to Design Virtuality?

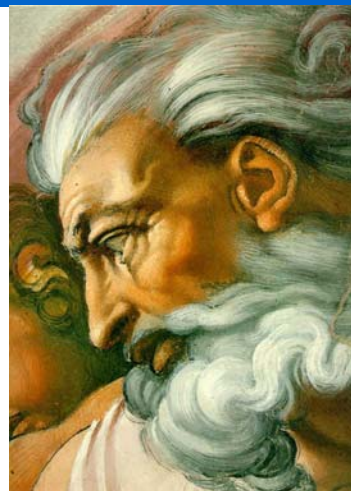
Two fundamental different views:

- 1) God's Eye View
- 2) First Person View

The God's Eye View

- The “God’s eye view” is based on the fundamental distinction between:
- **God** versus **the World**
- **Perceiver** versus **Perceived**
- **Subject** versus **Object**

This is the standard view in Science



The First Person View



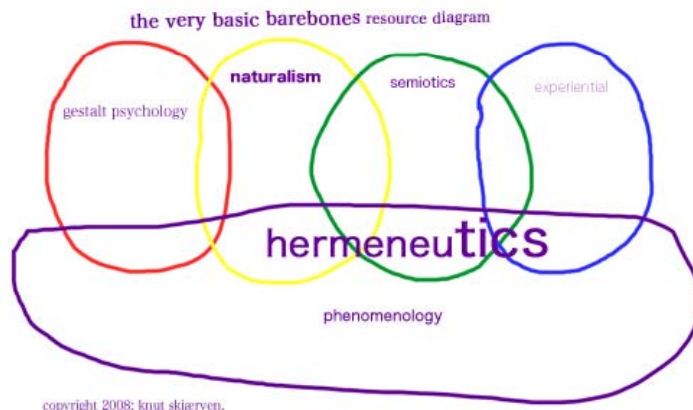
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Phenomenology



Maurice Merleau-Ponty

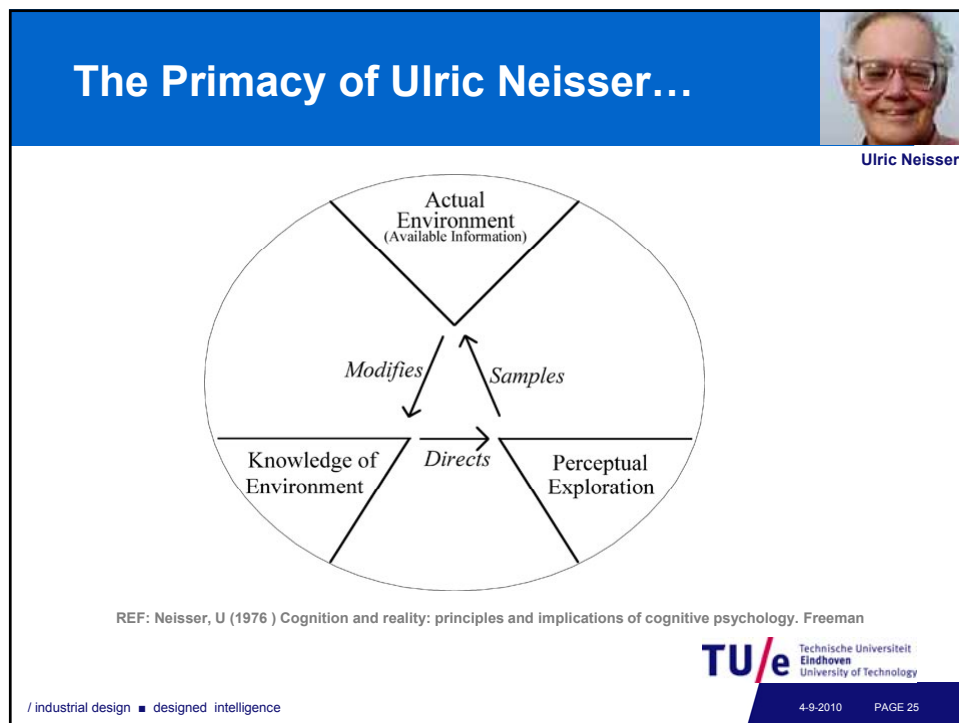
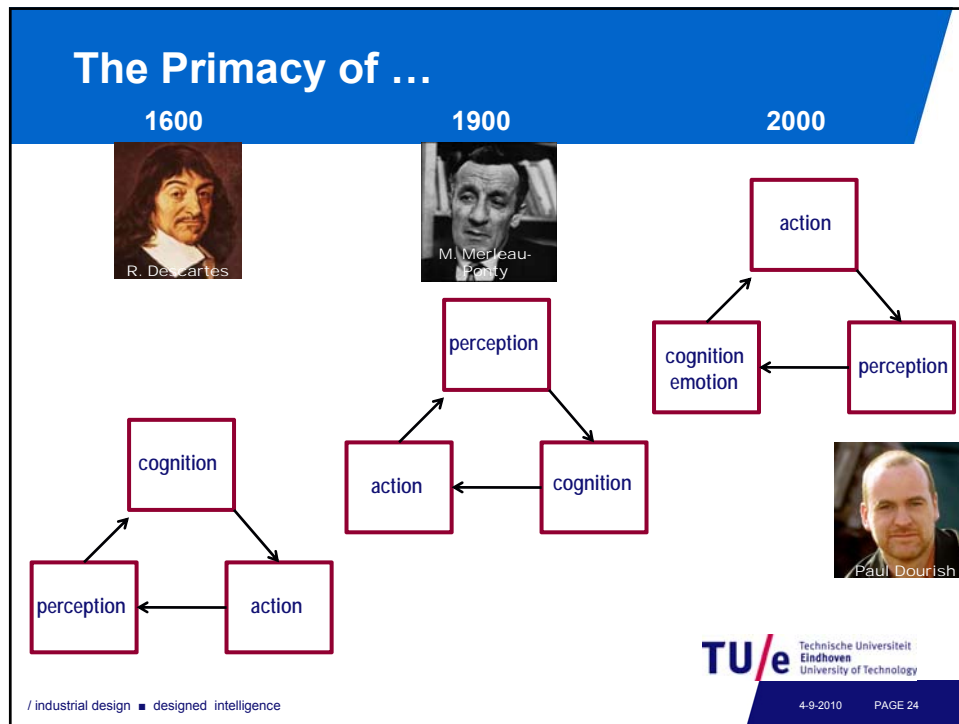


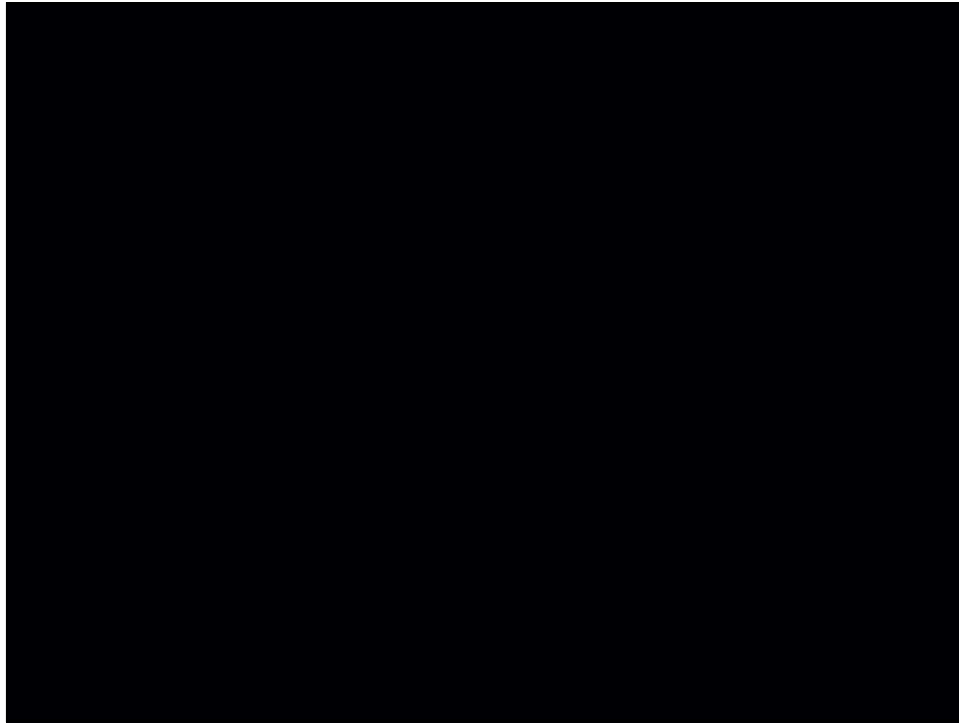
REF: Merleau-Ponty, M. (1945) Phénoménologie de la Perception. Gallimard

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So, What's Left after Descartes?



Richard Rorty

Decrease the “God’s Eye View” perspective.

Increase the “First Person View” perspective.

Connect with the environment through action.

Find a proper balance between all three.

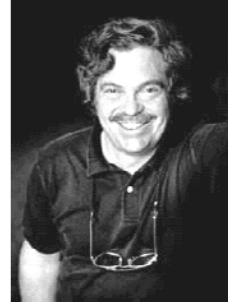
Thinker versus Tinker



Ludwig Boltzmann (1884-1906)

"There is nothing so practical as a good theory."

"Don't worry about what anybody else is going to do... The best way to predict the future is to invent it. Really smart people with reasonable funding can do just about anything that doesn't violate too many of Newton's Laws!"
(1971)



Alan C. Kay (1940-)

The End



René Magritte

