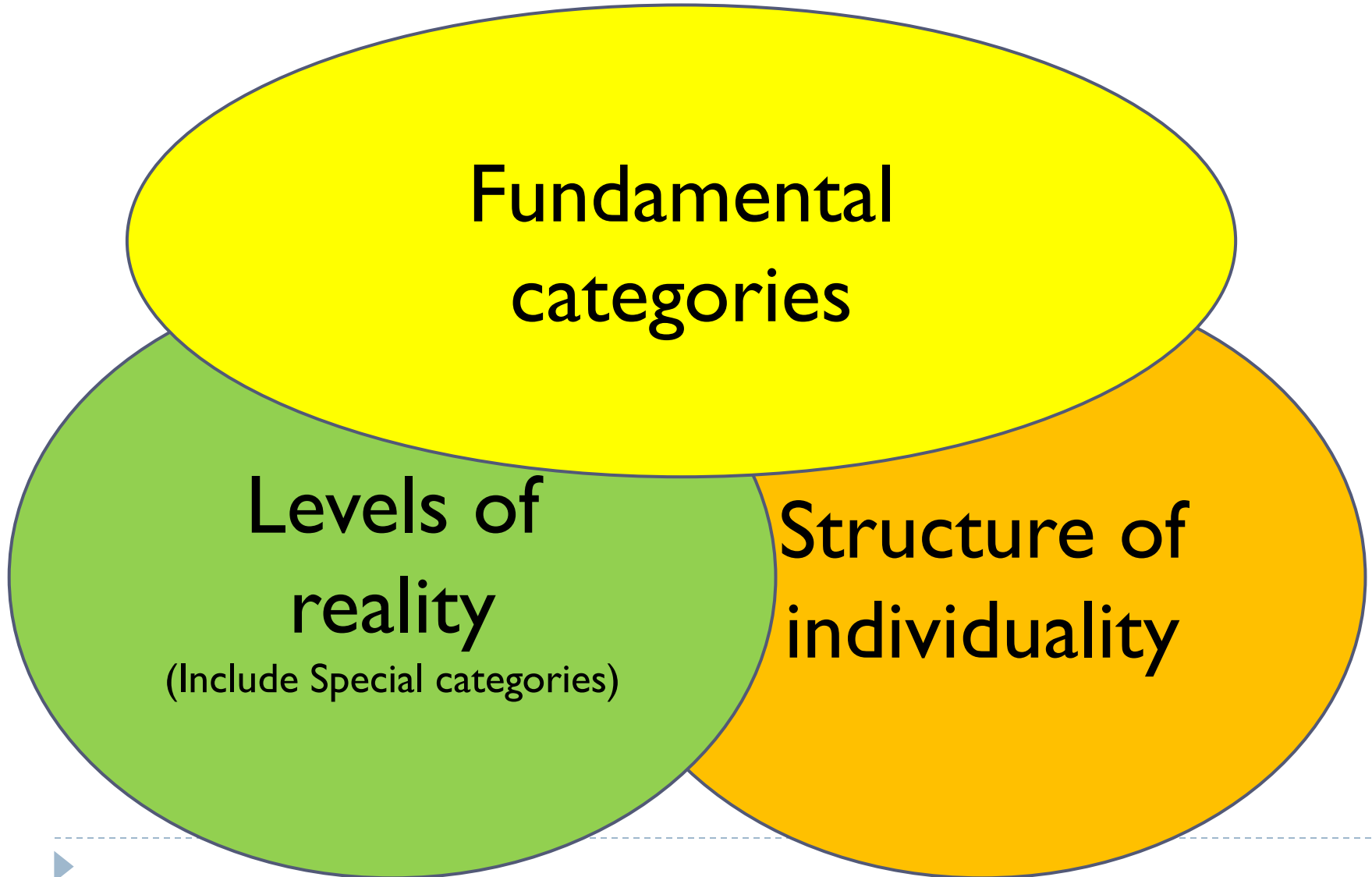


Ontological Categories

Roberto Poli

Ontology's three main components



Categorial Groups

- ▶ Three main groups of categories
 - ▶ Those that apply to all entities
 - ▶ Those that apply to the entities of one sphere of being only
 - ▶ Those that apply to specific families of entities (e.g. inanimate, etc.)
- ▶ Fundamental categories of both the real and ideal spheres of being
 - ▶ Moments of being: *Dasein*—*Sosein*
 - ▶ *Dasein* is analyzed by modal categories (e.g., actual; possible, necessary)
 - ▶ *Sosein* is analyzed by other groups of categories (e.g., principle-*concretum*, substrate-relation, etc)
- ▶ Fundamental categories that pertain to the real sphere of being only
 - ▶ Level categories (distinguishing the inanimate, living, psychological etc.)
 - ▶ Categorical laws (e.g., laws of validity, coherence, stratification and dependence) (some of which pertain to the ideal sphere too)
 - ▶ Special categories (e.g., for the inanimate being)
 - Space, time, causality, individuality, substance
 - ▶ Structure of individuality



The architecture of categories (Hartmann)

Fundamental categories

- The *Dasein/Sosein* articulation
- Modal categories
- Paired categories
- Level categories
- Categorical laws

Special categories

- Space
- Time
- Causality
- Process
- Substance
- ...

▶ Group 1

- ▶ Principle-*concretum*
- ▶ Structure-modus
- ▶ Form-matter
- ▶ Inner-outer
- ▶ Determination-dependence
- ▶ Quality-quantity

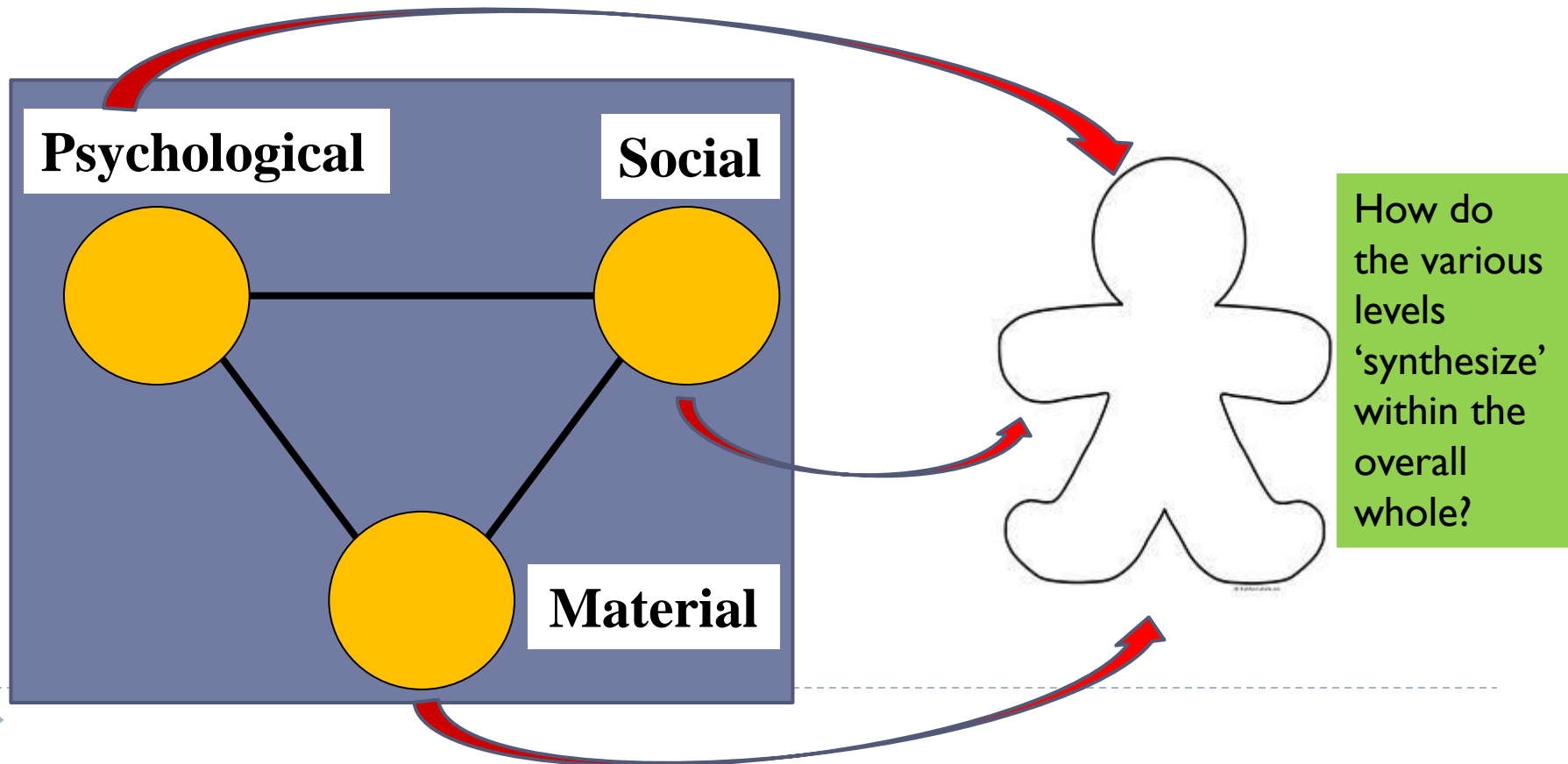
▶ Group 2

- ▶ Unity-multiplicity
- ▶ Harmony-conflict
- ▶ Opposition-dimension
- ▶ Discreteness-continuity
- ▶ Substratum-relation
- ▶ Element-complex

Real being

Require different groups of categories!

- ▶ Two main focuses
 - ▶ Levels of reality (material, psychological, social)
 - ▶ Individual entities (e.g, pluristratified individual beings)



Some preliminary definitions

- ▶ Original vs. derivative entity – Autonomous vs. heteronomous entity (Ingarden, Perzanowski, Poli)

Name	Def.	
Original	X cannot be produced by any other entity	$\neg\exists y.PR(y,x)$
Derivative	The existence of X requires the existence of some other entity Y	$D(x) = \exists y.PR(y,x)$
Autonomous	X is other-dependent and has its <u>foundation</u> in itself	$A(x) = MP(x,x)$
Heteronomous	X is other-dependent and has its <u>foundation</u> in something else	$H(x) = \exists y MP(y,x)$



Types of Wholes

- ▶ **Simple wholes** are wholes that can be decomposed into parts without losing information
 - ▶ Aggregates are cases in point
- ▶ **Partial wholes** are wholes that are not simple and are existentially heteronomous
 - ▶ Ear
- ▶ **Integral wholes** are wholes that are not simple and are existentially autonomous
 - ▶ Organism



Partial vs. Integral Wholes

- ▶ The difference between partial and integral wholes can be exemplified by the difference between ears and organisms
 - ▶ Both are wholes. Ears are authentic wholes, they can be studied by themselves in order to understand what they are and do
 - ▶ One can divide an ear into its parts and see how they are made and what they do. The same applies to an organism
 - ▶ Both are authentic wholes, both can be studied in themselves, both can be subjected to (partial) analysis and synthesis. On the other hand, it seems correct to claim that organisms are more completely wholes than ears (because they have their foundation in themselves)



Other-dependence

- ▶ On the other hand, both ears and organisms are derivative entities, they depend on other entities
 - ▶ Organisms require air (for aerobic organisms), food, mates, etc
 - ▶ Organisms are parts of higher-order wholes, such as the ecological niche in which they live. This amounts saying that organisms are far from being original (*absolute* or completely independent) wholes



Integral Wholes

- ▶ Some integral wholes present the intriguing structural feature of producing their own parts (autopoiesis) \Rightarrow “Foundation”
- ▶ An autopoietic whole does not start from a set of pre-given elements, neither does it assemble them. Autopoietic wholes are self-referential systems, meaning that the whole’s relational self-production governs the whole’s capacity to have contacts with its environment
- ▶ Put otherwise, the whole’s connection with its environment becomes a reflexive relation mediated by the self-referential loops that constitute the whole itself. This property changes the nature and workings of the whole, dramatically strengthening the synthetic priority of the whole with respect to its parts



Levels of Reality

- ▶ What about entities pertaining to different levels of reality? (such as ourselves)
- ▶ Levels of Reality: Material—Psychological—Social
- ▶ Reading their connections as of the part-whole type generates many troubles
- ▶ Let us read them as connected by whole-whole ties
 - ▶ This is one of the two great intuitions of the Dutch philosopher (and theologian) Hermann Dooyeweerd (see his *A New Critique of Theoretical Thought*, Philadelphia: The Presbyterian and Reformed Publishing Company, vol. 3)



Encapsulation

- ▶ **Whole-whole ties (aka enkapsis or encapsulation)**
 - ▶ Foundational encapsulation, such as the sculpture, and the block of marble from which it is made
 - ▶ Subject-object encapsulation, such as a hermit crab and its shell
 - ▶ Symbiotic encapsulation, such as clover and its nitrogen-fixing bacteria
 - ▶ Correlative encapsulation, such as an environment and its denizens
 - ▶ Territorial encapsulation, such as a city and its university
- ▶ **I shall restrict my remarks to foundational encapsulation**



Foundational Encapsulation

- ▶ To grasp the framework addressed by foundational encapsulation, let us consider a few relevant cases, such as those exemplified by the following ties:
 - ▶ The marble—statue tie
 - ▶ The canvas—painting tie
 - ▶ The paper—water-color tie
 - ▶ The paper—novel tie
 - ▶ The CD—song tie



Foundational Encapsulation

- ▶ To simplify inquiry I have chosen cases pertaining to the same sub-family of foundational encapsulation, namely the family of works of art
- ▶ It is apparent that all the above five cases show that there is a connection between something that behaves as a bearer and something else that is borne by it
- ▶ The features that describe the nature of the objects playing the role of bearer and the objects that are borne by them are widely if not entirely different
 - ▶ The *physical* properties of marble, canvas, paper and a CD, in fact, are remarkably different from the *aesthetic* properties of the statue, painting, water-color, novel and song



Two Families

- ▶ The five exemplifications above can be divided into two different groups distinguished by whether the bearer has some interaction with the object that it bears
 - ▶ CDs and the paper used to print a novel, in fact, have no kind of interaction with the higher-order objects they bear, as proved by the fact that the latter objects can be just as effectively borne by other bearers, such as mp3 or pdf files. Electronic versions of novels and songs are as authentic as paper-printed or CD-printed versions
 - ▶ On the other hand, the tie between a water-color and the paper on which it is painted is more intimate, because the color penetrates into the paper's fibers. It is well known, in fact, that water-colors should be painted on special kinds of paper which let the color penetrate into their fibers because this *adds* further layers of expressivity to the painting. Similarly, not all types of marble are equally suitable for a given statue, and the properties of the marble add something to the aesthetic properties of the statue
-



Interaction

- ▶ The colors used by an artist are themselves material entities – and this explains why they can interact with the material surfaces on which they are placed
- ▶ The features of the marble are explicitly exploited by the artist when she gives shape to her work; they are information that enters the fabric of the work of art



Reproducibility

- ▶ Another characteristic, reproducibility, helps in digging deeper into the differences between the two families
- ▶ The exemplifications belonging to the first group (sons and novels) can be reproduced as many times as one likes, and all of them remain true exemplifications of the same object
 - ▶ This further explains why the bearer is utterly irrelevant to the borne object: some bearer is needed in order to instantiate the object, but what kind of bearer is used is utterly immaterial
- ▶ The second group (water-colors) is composed of objects that cannot be truly reproduced, in the sense that any reproduction is a *different* object from the original
 - ▶ The non-reproducibility of this family patently depends on the more intimate connection between the borne component and its bearer



Main Outcome

- ▶ The analysis thus far has shown that there are at least some objects with a stratified structure organized in such a way that their strata are linked by a double connection
 - ▶ First, the higher stratum existentially depends on its lower stratum (it must be instantiated into some “matter”)
 - ▶ Second, the properties of the two strata are widely different if not utterly orthogonal
 - ▶ (The further distinction between reproducible and non reproducible instances shows that other components may have to be taken into account)



Whole-Whole ties

- ▶ The five cases we have seen are far from exemplify authentic part-whole relations, because the two strata of the bearer and the borne have different natures
- ▶ An authentic part-whole relation can work only between objects with the same nature
- ▶ The existential dependence of the higher stratum on the lower one is thus far from being a sufficient condition for a part-whole relation
 - ▶ We need air to keep ourselves alive, we existentially depend on it, but air is not one of our parts
- ▶ The greater whole which include sub-wholes “encapsulates” them
- ▶ Capsulate wholes are everywhere. Molecules capsulate atoms, and cells capsulate molecules, and so on and so forth. Works of art capsulate their bearers. For all these cases, the nature of the capsulate whole overrides the nature of its capsulated sub-wholes



A Critical Issue 1

- ▶ The interest surrounding the analysis of parts and wholes that has become so popular during the past 20-odd years is almost completely focused on the *relation* “part-of”
 - ▶ The *non-relational* category of whole has been far less addressed, apparently for a number of good reasons. Not only are wholes more refractory to categorical scrutiny, but the viewpoint of wholes has been historically connected to visions that today do not have much currency, such as the theory of the so-called ethical state developed by Hegel and other idealist thinkers. It is also well-known that some of the most obviously outdated proposals advanced by Aristotle, notably his theories on the state and the family, and the consequent subordinate role of women and slaves, directly depended on his view of the state and the family as wholes
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A Critical Issue 2

- ▶ The most straightforward reading of these issues can be aptly summarized thus: the family and the state are wholes, the husband/father/king is the formal representative of the family (“is” the family) or the state (“is” the state), and every other member of the family/state must be subordinated to him/it
- ▶ This reading critically depends on a specific assumption: that a natural whole always has (must have) a canonical representative
- ▶ Leaving many details aside, the main question is nevertheless apparent. Why should a whole have one unique individual representative?
- ▶ Only specific – i.e. non-generic – wholes do. In particular, only (totally, i.e. perfectly) hierarchical wholes have maxima

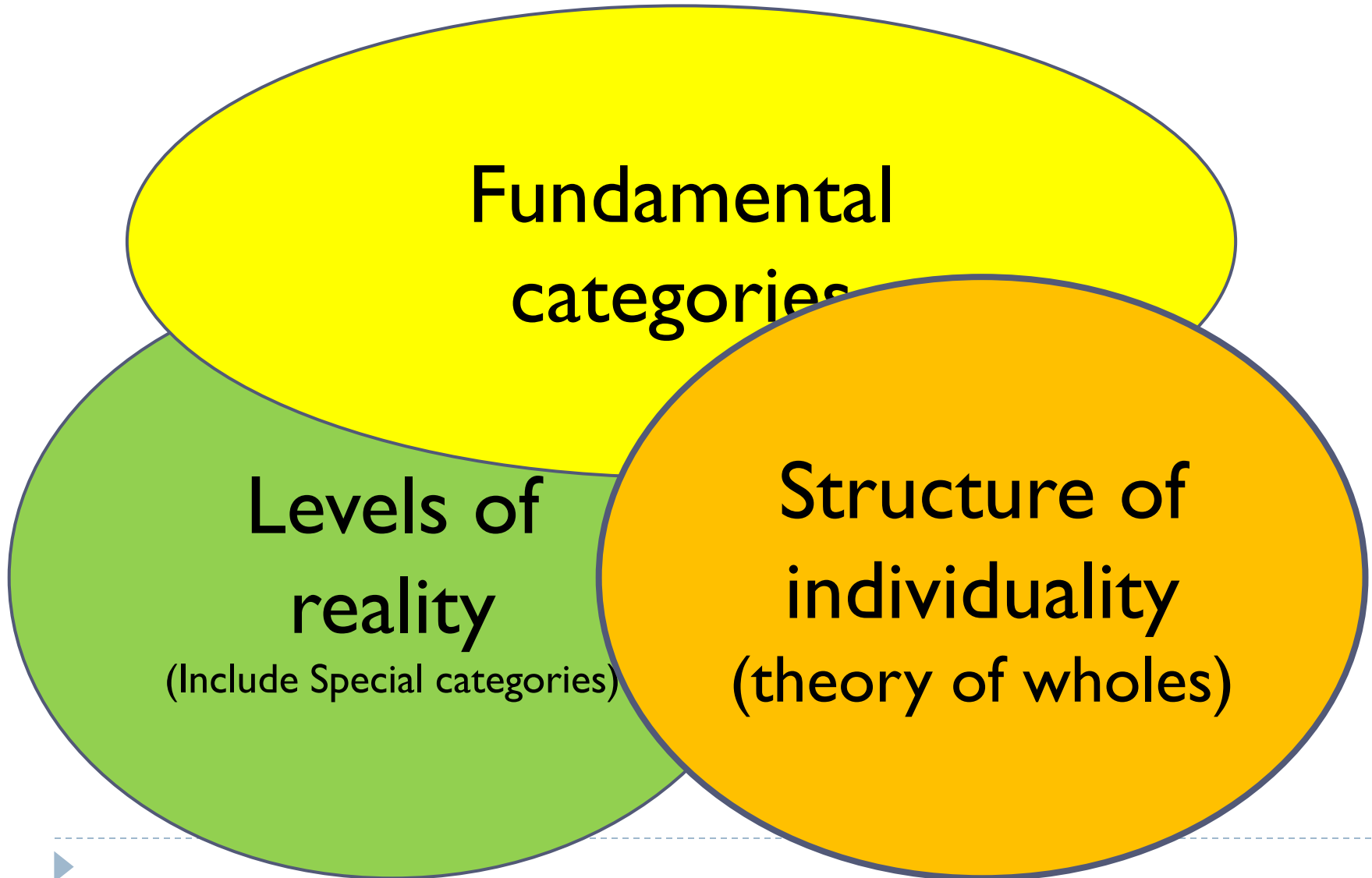


A Critical Issue 3

- ▶ This shows that the theory of wholes cannot be restricted to those wholes that have unique canonical representatives
- ▶ One of the distinctive characteristics of modern society – as opposed to traditional societies – is the transformation from an essentially hierarchical structure (well represented by the king) to a functional organization in which politics, law, economics, art, religion, science etc have their own role to play
- ▶ There is no natural way to confine functional structures within one single hierarchy. The same applies to the family: both spouses are equally representative of the whole that is their family
- ▶ Hierarchical wholes are then but a tiny subsection of wholes, and it is simply wrong to conceive wholes as hierarchical. Some are, many more are not



Ontology's three main components



Conclusion: An hidden assumption

- ▶ Science as an epistemological affair vs. science as an ontological affair
- ▶ According to the theory I have presented “**Science is ontological in all its ramifications**”



Four interconnected theses

1. Ontological distinctions have the form of categories
2. Science is ontological in all its ramifications
3. If science is ontological, then scientific categories are further specifications and subdivisions of ontological categories
4. By virtue of the problems it addresses, ontology is *philosophia prima*; because of the answers it proposes ontology can be only *philosophia ultima*. In between there is science



Four interconnected theses

- ▶ **Ontological distinctions have the form of categories**
 - ▶ All the differences are articulations of being, not differences between being and not-being. Parts and wholes are both authentic aspects of being; independent and dependent entities are similarly being; physical, biological, psychological and spiritual types of being are all manifestations of being, without any of them being more genuinely being than any other. No part, aspect or moment of reality is more real than any other part, aspect or moment of it
- ▶ **Science is ontological in all its ramifications**
 - ▶ Against the reading of science as an eminently epistemological affair. This is one of the issues on which Hartmann firmly departs from the Kantian – better, the Neo-Kantian – legacy
- ▶ **If science is ontological, then scientific categories are further specifications and subdivisions of ontological categories**
 - ▶ Philosophers deal with the most general categories, while scientists deal with their subsequent specifications. “The theory of categories does not extend natural science. But it is the theory of its presuppositions” (E.49d)
- ▶ **By virtue of the problems it addresses, ontology is *philosophia prima*; because of the answers it proposes ontology can be only *philosophia ultima*. In between there is science**
 - ▶ Categories are extracted from objects; productive interplay with science



Thanks

