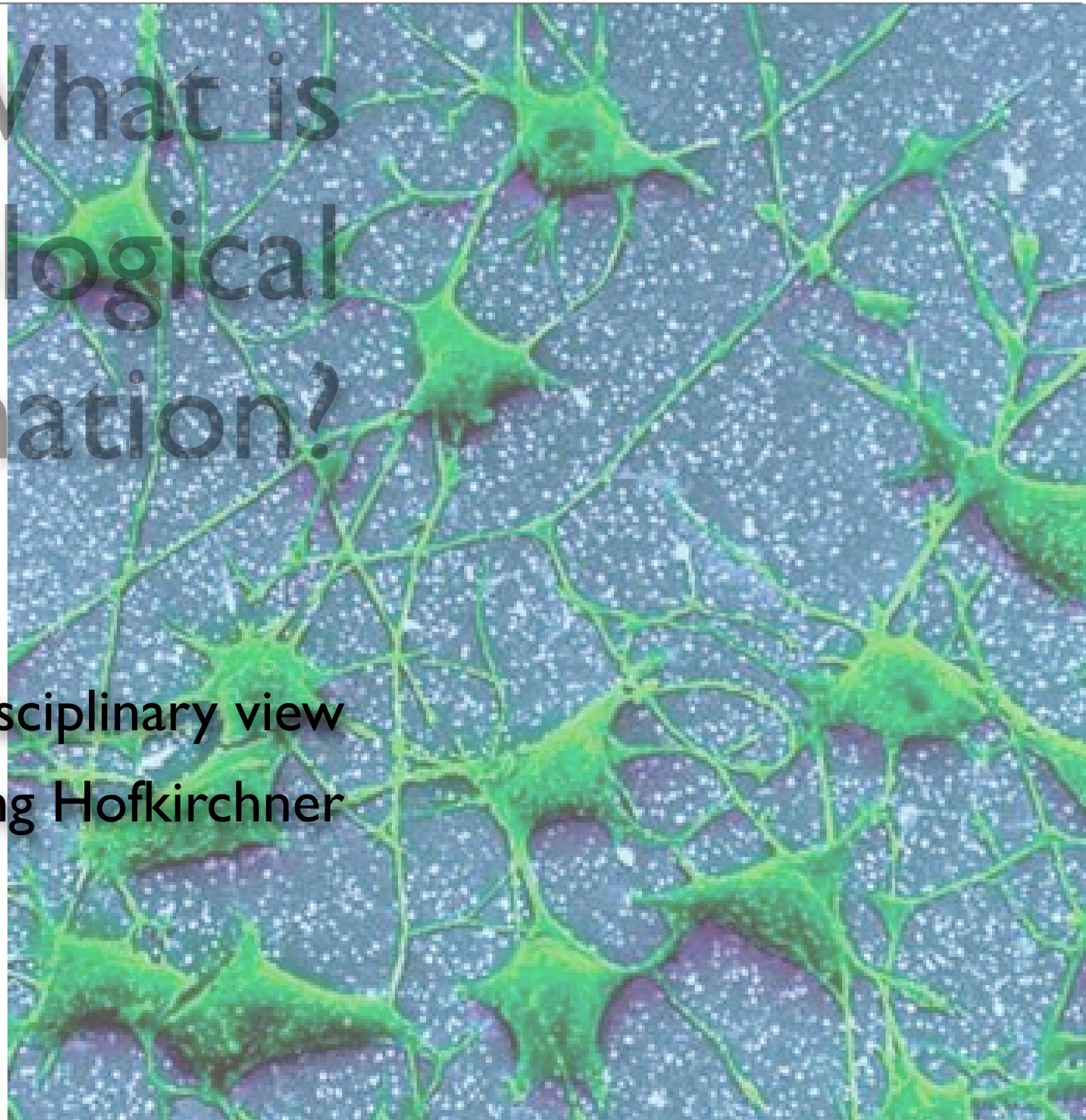




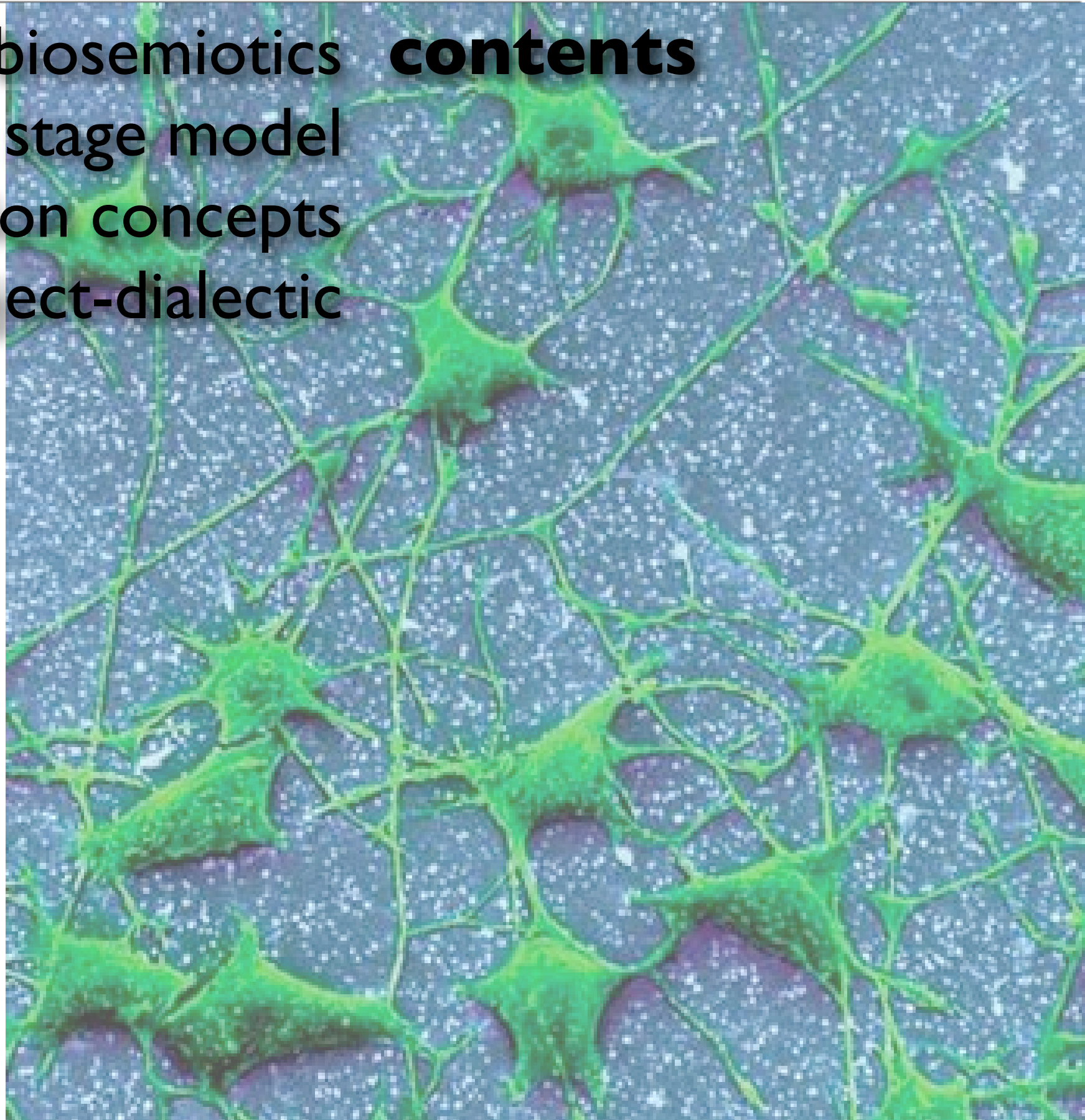
# What is biological information?

A transdisciplinary view  
By Wolfgang Hofkirchner





- biosemiotics **contents**
  - stage model
- information concepts
- subject-object-dialectic





# **biosemiotics**

**biology:**  
study of life  
processes  
(science)

**semiotics:**  
study of sign  
processes  
(humanities)



first way of thinking: **biosemiotics,**  
reductionism **mechanistic**  
(unity without diversity; **(sociobiology)**  
establishing identity at the cost of  
the more complex)

biology:  
study of life  
processes  
(science)

semiotics:  
study of sign  
processes  
(humanities)

second way of thinking: **biosemiotics,**  
projectionism **humanistic**  
(unity without diversity; **(anthropo-**  
establishing identity in favour of **morphism,**  
the more complex) **spirituality)**

biology:  
study of life  
processes  
(science)

semiotics:  
study of sign  
processes  
(humanities)



third way of thinking: **biosemiotics**  
strict dualism **as an applied**  
(diversity without unity; **discipline**  
establishing the difference while **(multidiscipline)**  
eliminating identity)

biology:  
study of life  
processes  
(science)

semiotics:  
study of sign  
processes  
(humanities)

third way of thinking: **biosemiotics**  
interactive dualism **as an applied**  
(diversity without unity; **discipline**  
establishing the difference while **(interdiscipline)**  
eliminating identity)

biology:  
study of life  
processes  
(science)

semiotics:  
study of sign  
processes  
(humanities)



fourth way of thinking: **biosemiotics**  
integration and differentiation **as a transdiscipline**  
(unity through diversity;  
establishing identity and the  
difference in one)

biosemiotics:  
study of living  
systems as sign  
systems

sociosemiotics:  
study of human  
systems as sign  
systems





# biosemiotics as a transdiscipline

semiotics,  
information  
science

physico-  
semiotics:  
study of  
material  
systems as sign  
systems

biosemiotics:  
study of living  
systems as sign  
systems

sociosemiotics:  
study of human  
systems as sign  
systems

# **biosemiotics as a transdiscipline**

evolutionary systems theory

semiotics,  
information  
science

physico-  
semiotics:  
study of  
material  
systems as sign  
systems

biosemiotics:  
study of living  
systems as sign  
systems

sociosemiotics:  
study of human  
systems as sign  
systems



philosophy

# biosemiotics as a transdiscipline

evolutionary systems theory

semiotics,  
information  
science

physico-  
semiotics:  
study of  
material  
systems as sign  
systems

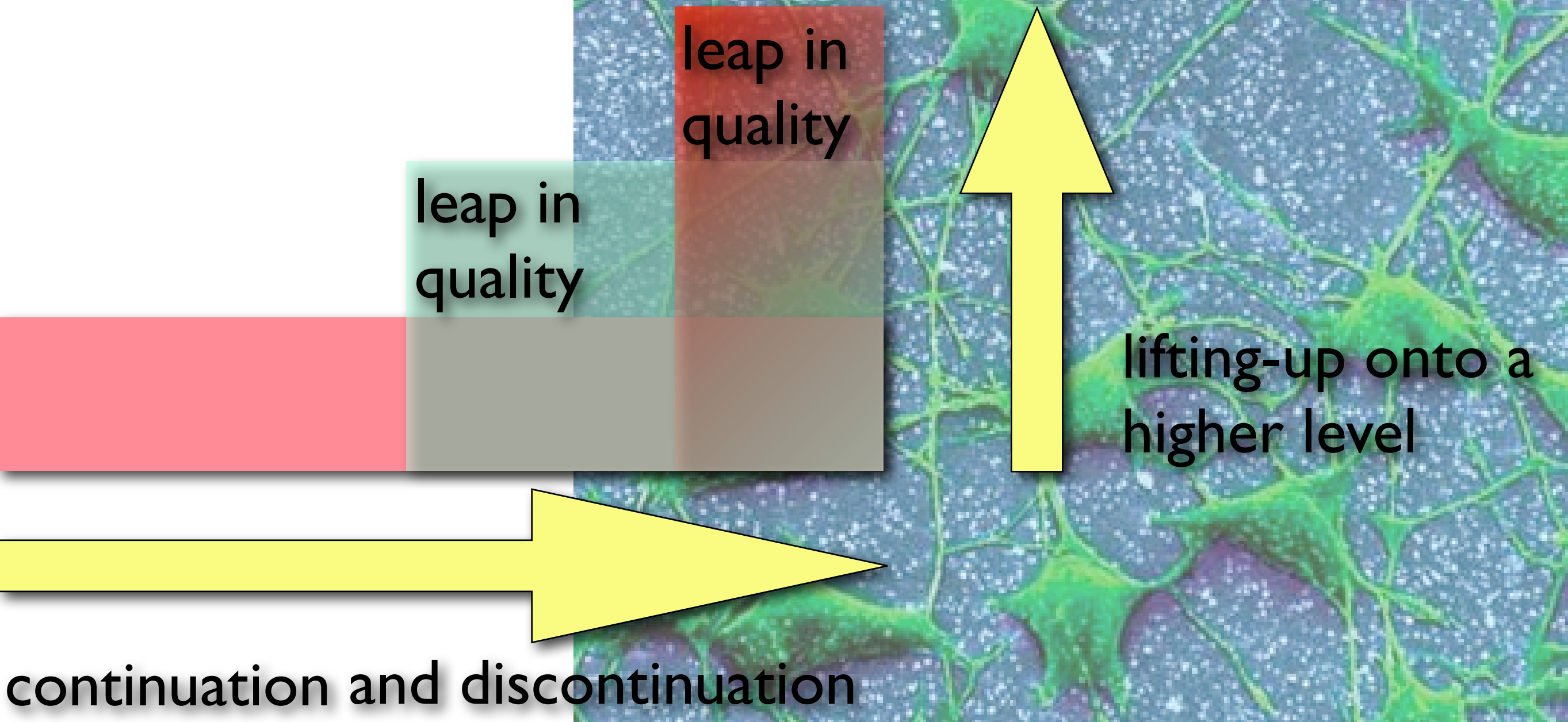
biosemiotics:  
study of living  
systems as sign  
systems

sociosemiotics:  
study of human  
systems as sign  
systems





dialectical notion of sublation **stage**  
**model: philosophical**  
**I view of evolution**



dialectical account of  
determination:  
historicity,  
determinacy and indeterminacy

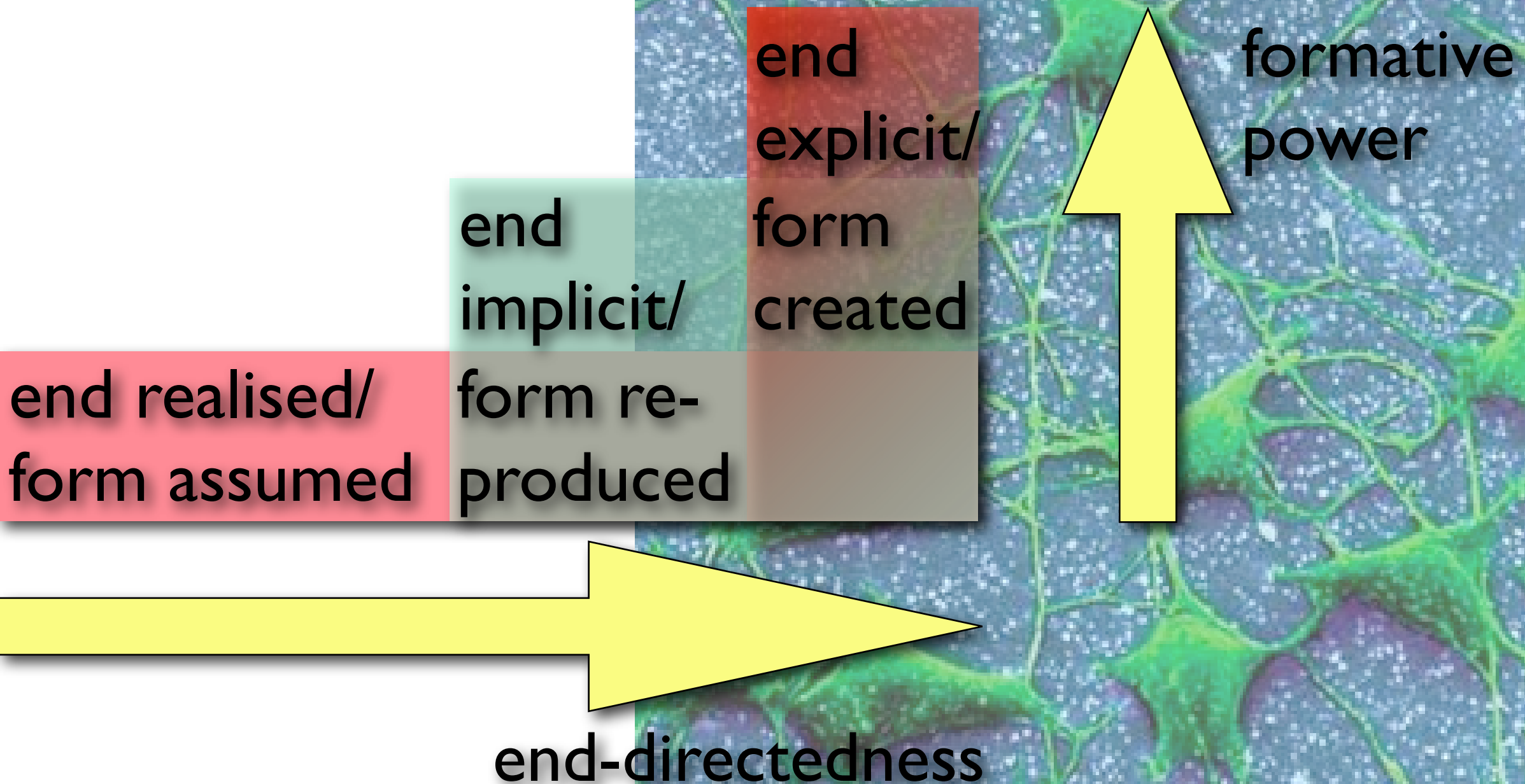
**stage model:  
philosophical view  
of evolution**

from necessity  
to contingency

from universal to the particular

dialectical account of causation: unfolding subjectivity

**stage model:  
philosophical view  
of evolution**







metasystem transition and  
supersystem hierarchy  
(emergence and downward  
causation)

**stage  
model: evolutionar  
y systems theory**

social self-  
organisation  
biotic self-  
organisation  
physical, chemical self-  
organisation

material  
systems

living  
systems

human  
systems



unfolding of information

**stage model:  
semiotics,  
information  
science**

social information

biotic information

physical, chemical  
information

material  
systems

living  
systems

human  
systems



# Capurro's trilemma **information concepts**

	information
synonymy	there is one singular meaning that applies to all fields
analogism	there are several meanings each of which is similar to one particular meaning that serves as standard of comparison
equivocalness	there are different meanings each of which applies only to one singular field





# Snow's two cultures **information concepts**

	information...
“hard” science perspective: synonymity	is an object (substance)
analogism	there are several meanings each of which is similar to one particular meaning that serves as standard of comparison
equivocalness	there are different meanings each of which applies only to one singular field



# Snow's two cultures **information concepts**

	information in the context of...		
	cognition...	communication...	co-operation...
“hard” science perspective: synonymity	is an object (substance) that can be...		
	received and processed	transmitted	distributed, stored, retrieved
analogism	there are several meanings each of which is similar to one particular meaning that serves as standard of comparison		
equivocalness	there are different meanings each of which applies only to one singular field		



# Snow's two cultures **information concepts**

		information in the context of...		
		cognition...	communication...	co-operation...
“hard” science perspective: synonymy		is an object (substance) that can be...		
		received and processed	transmitted	distributed, stored, retrieved
“soft” science perspective	ana-logism	is a (mental) construction done by subjects (human actors)...		
	equivocalness	internally	interactively	externally





# four ways of thinking **information concepts**

		information in the context of...		
		cognition...	communication...	co-operation...
“hard” science perspective: reductionism		is an object (substance) that can be...		
		received and processed	transmitted	distributed, stored, retrieved
“soft” science perspective	projectionism	is a (mental) construction done by subjects (human actors)...		
	dualism	internally	interactively	externally



# four ways of thinking **information concepts**

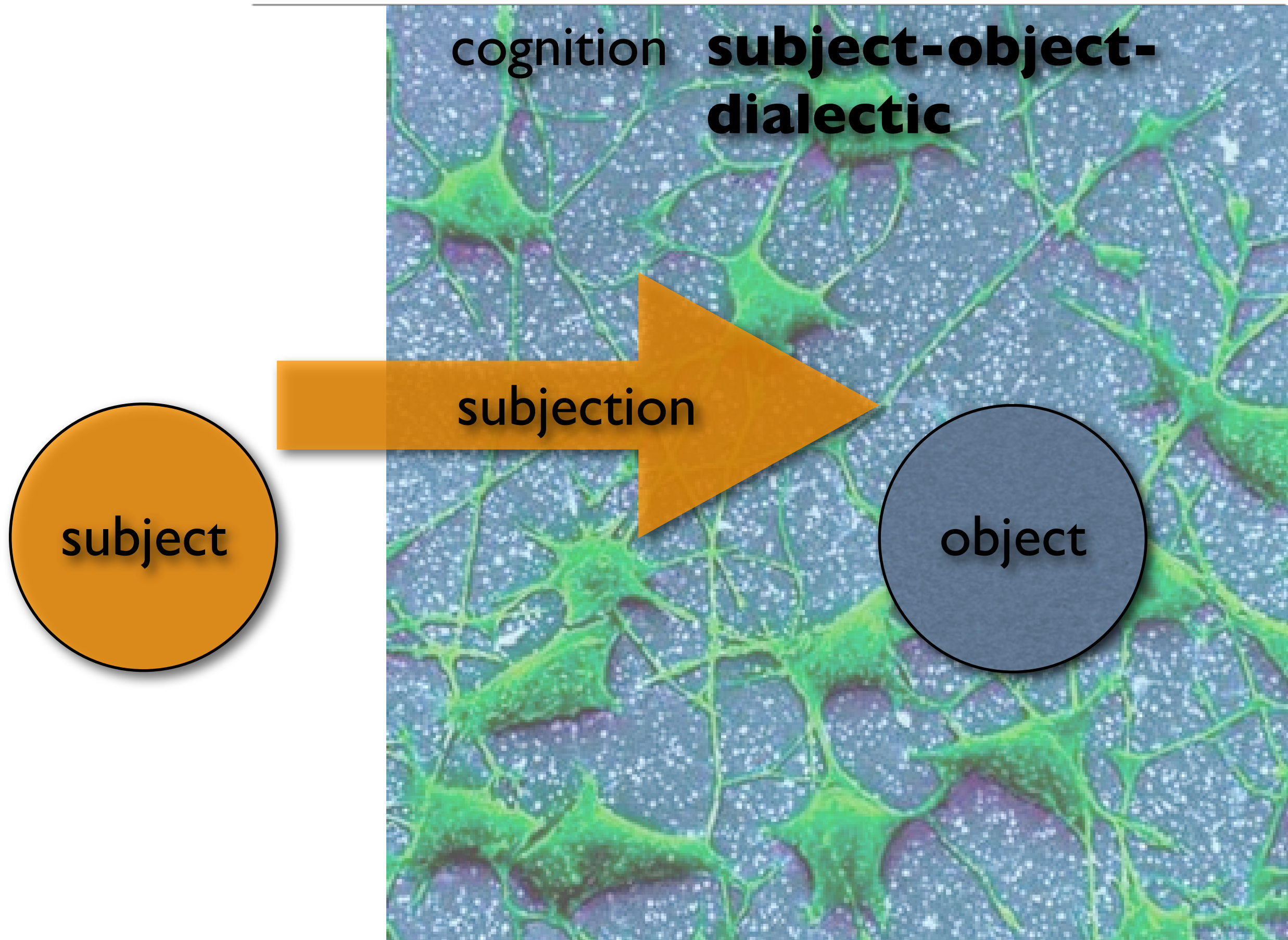
		information in the context of...		
		cognition...	communication...	co-operation...
“hard” science perspective: reductionism		is an object (substance) that can be...		
		received and processed	transmitted	distributed, stored, retrieved
“soft” science perspective	projectionism	is a (mental) construction done by subjects (human actors)...		
	dualism	internally	interactively	externally
unifying perspective: integration-and-differentiation		is an objective process by which systems subjectively relate their self-organised order to perturbations originating in...		
		their umwelt	co-systems	the system they give rise to

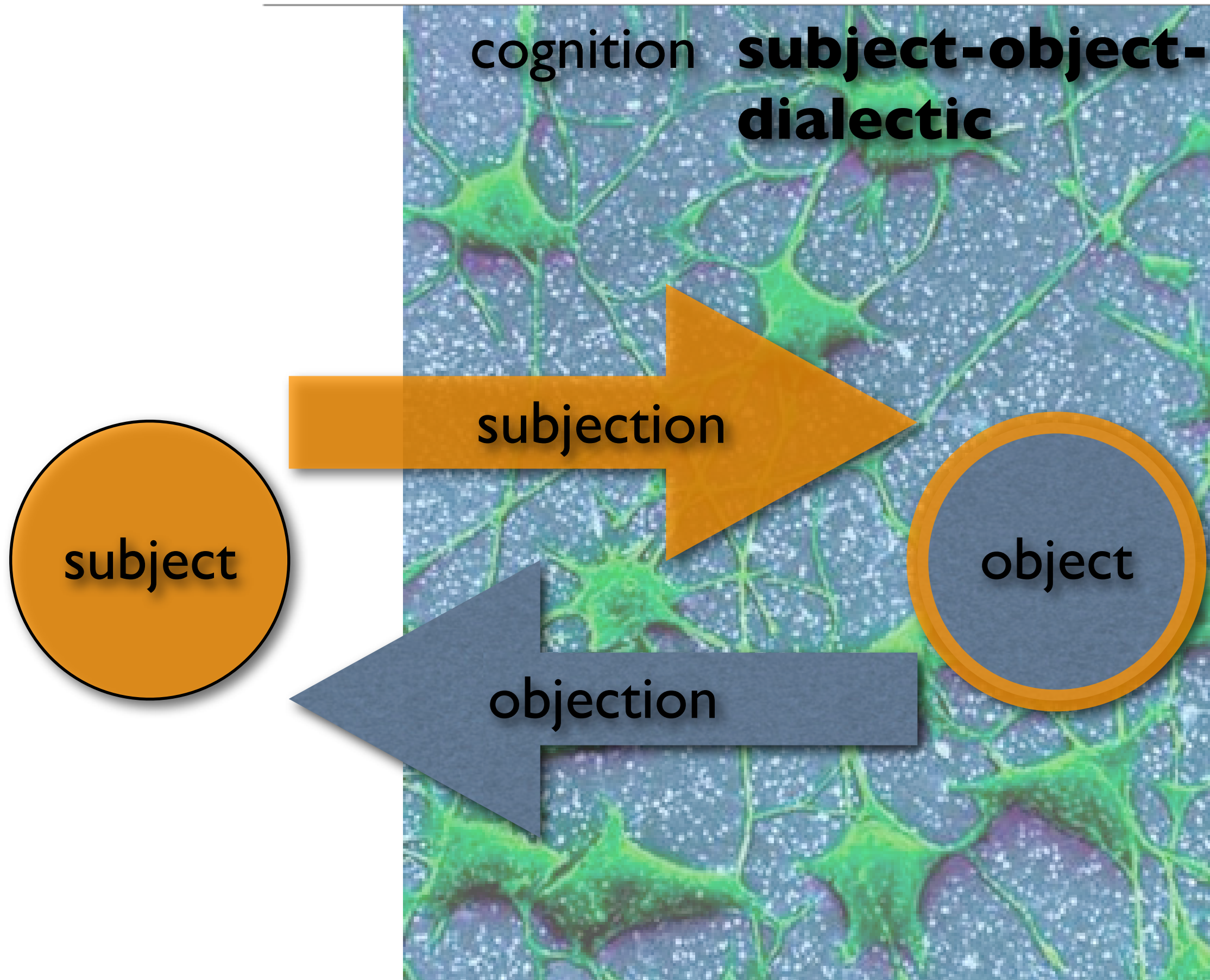


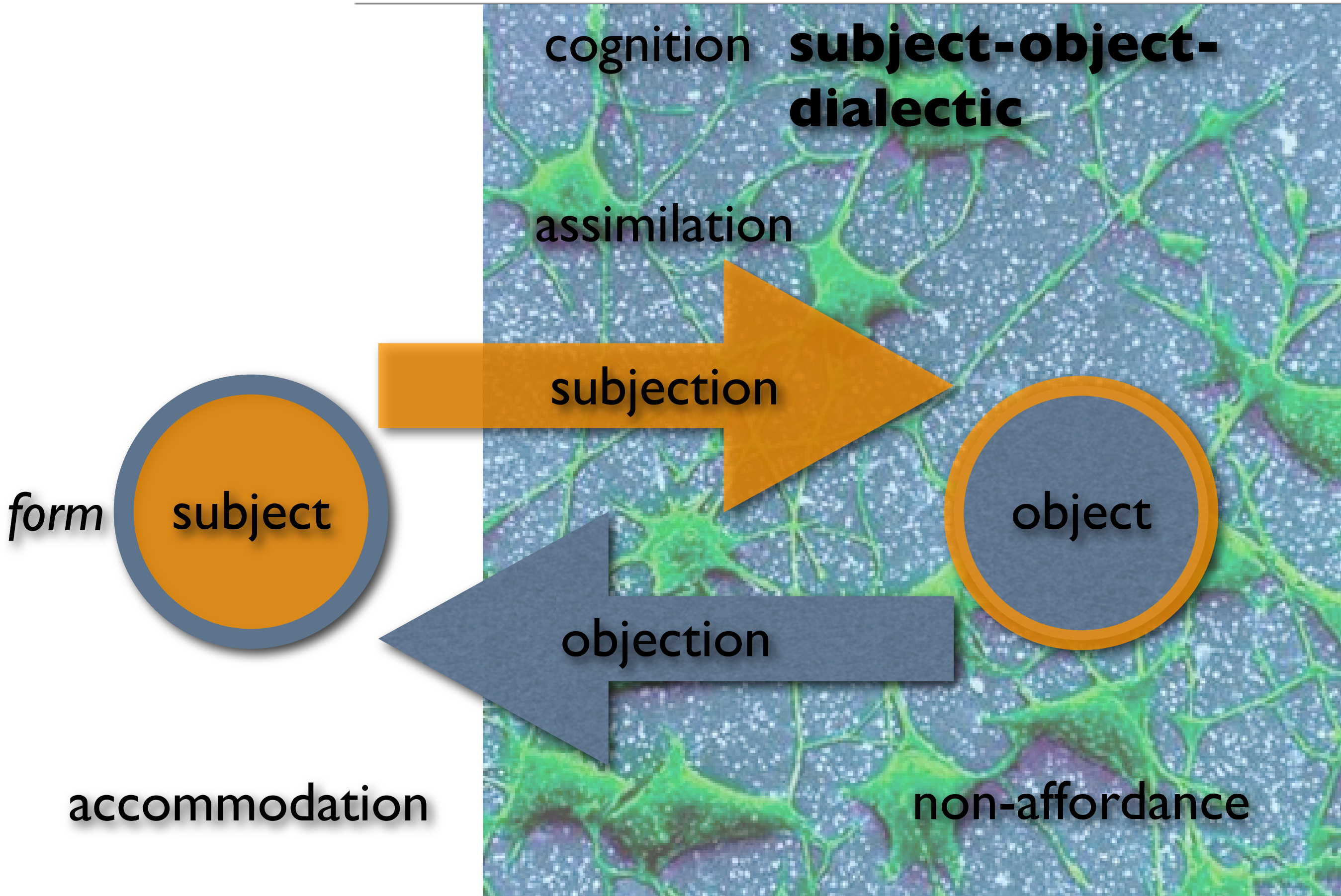
**subject-object-  
dialectic as basis  
for information  
accounts**

	philosophy:s ubject- object- dialectic	cross-disciplines: self- organisation	information
agents	subjects	evolutionary systems	signmakers
sphere of agency	objects	per- turbations	(to-be-) signified
means of agency	medium	order	sign













communication **subject-object-  
dialectic**

intersubjectifications

subject

co-subject



communication **subject-object-  
dialectic**

“information”<sub>s</sub>

“message”<sub>s-c</sub>

“understanding”<sub>c</sub>

intersubjectification<sub>s</sub>

subject

co-subject *form*

intersubjectification<sub>c</sub>





communication **subject-object-  
dialectic**

“information”<sub>s</sub>

“message”<sub>s-c</sub>

“understanding”<sub>c</sub>

intersubjectification<sub>s</sub>

*form*

subject

co-subject *form*

intersubjectification<sub>c</sub>

“understanding”<sub>s</sub>

“message”<sub>c-s</sub>

“information”<sub>c</sub>





co-operation **subject-object-  
dialectic**

objectification

quorum  
subjects

super-  
subject



