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En introduktion till det molära paradigmet – ett nytt sätt att uppfatta beteende?

Introduction to the Molar Paradigm – A New Understanding of Behavior?

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SWABA Höstträff
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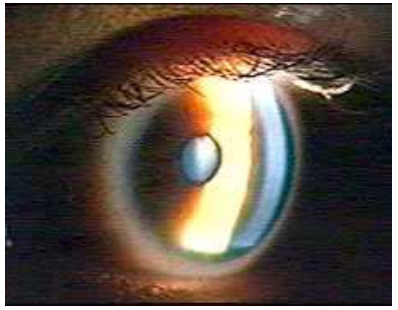
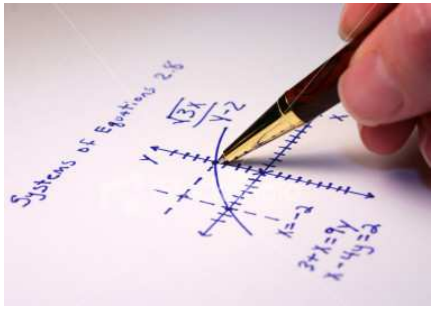
Science of Behavior





-*lawful relations* between
environmental events & behavioral events (data)

? ↓	? ↓
Effective stimuli	Meaningful responses
Point of light on the retina	Muscle twitch
Algebra problem	Solution

Size of the units?
Rather large (molar) units?
Or *discrete* (molecular) building blocks?

A-B-C
but what are they?

Response
Stimulus
Consequence

Activity
Context
Inducer

How observer should classify environment (as stimuli) and behavior (as responses) depends on research question

Outline:

- Introduction
- Molar-molecular continuum
- Discreteness of events
- Molar/molecular data
- Contiguity/Contingency
- Behavior takes time
- Behavior is choice
- Private Events
- Allocations
- Phylogenetically Important Events (PIEs)
- Induction
- Conclusions

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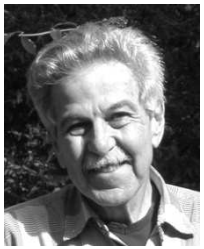
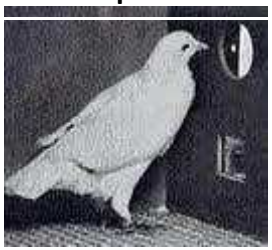
Relativity of the Observational Dimension

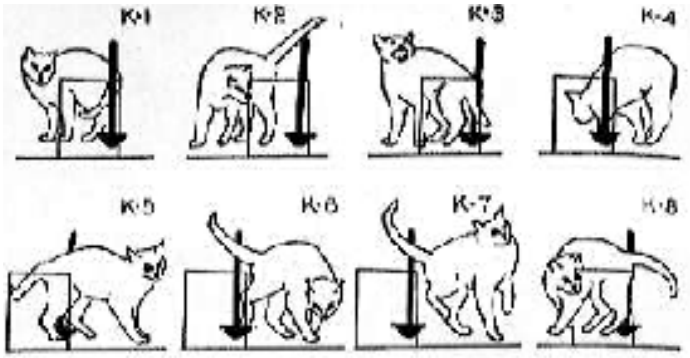
Molecular — Molar



atomic physician — physiologist — psychologist

reflexes — operants — extended contingencies





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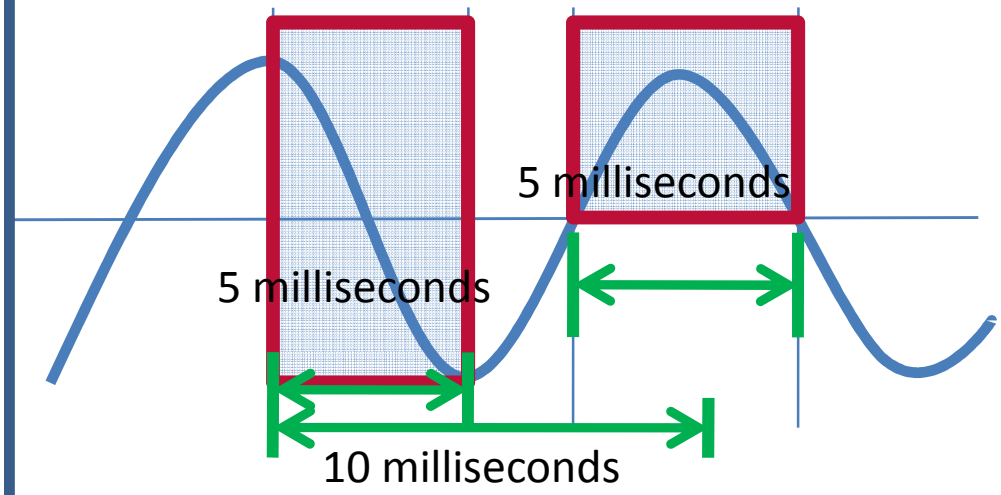
Is a Molecular Analysis Always More Accurate?

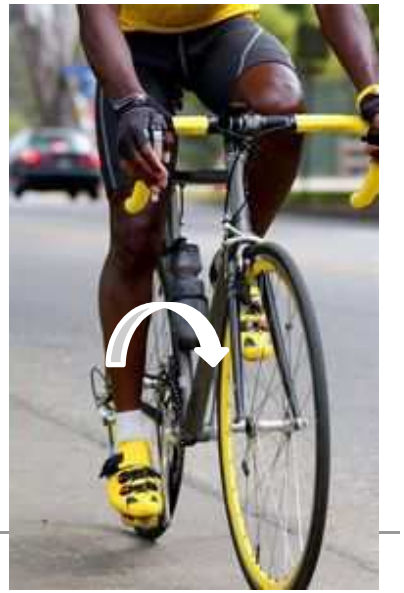
No!



Discreteness of Events

- **Discrete event**: Event that takes place within such a brief time span that the time during which it occurs is insignificant compared with the time between successive occurrences of the event
- Eye blink, lever press, pistol shot
- Discreteness *can be* convenient fiction

- How to deal with continuous events?
  - Measure time it takes (nest building etc.)
    - Most commonly continuous events are analyzed into discrete components (bike ride)



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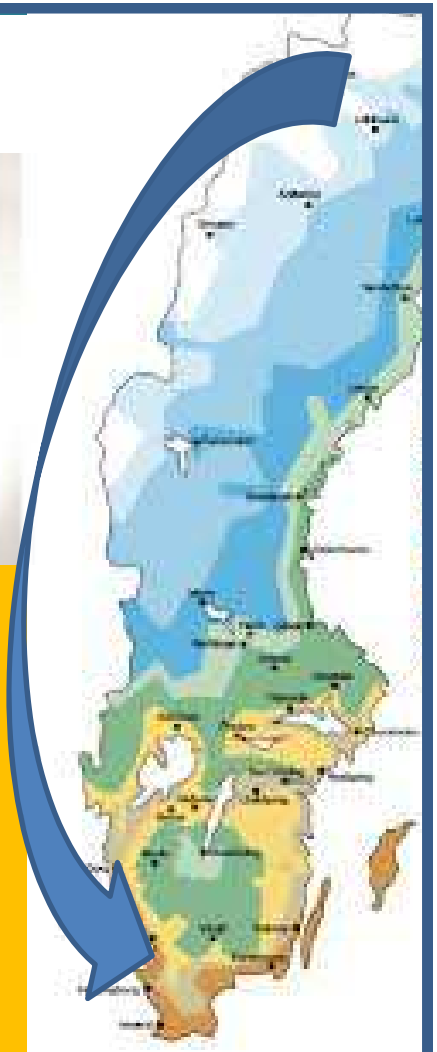
What Can Constitute a Fundamental Psychological Unit?

Molar

- Behavior is sensible to molar aspects of the environment
- Rate of discrete events are the data, they do not have meaning at an instant of time
- Discrete events are abstractions since: Truly momentary behavior does not exist
- If fundamental units of learning can have duration in time, contingencies can be experienced directly without prior learning of contiguities (as gestalt psychologists said we experience music)



Molecular

- Momentary events change an organism's state
- Momentary events are the data
- Rates are abstractions
- If basis of all learning is molecular learning happens based on contiguities

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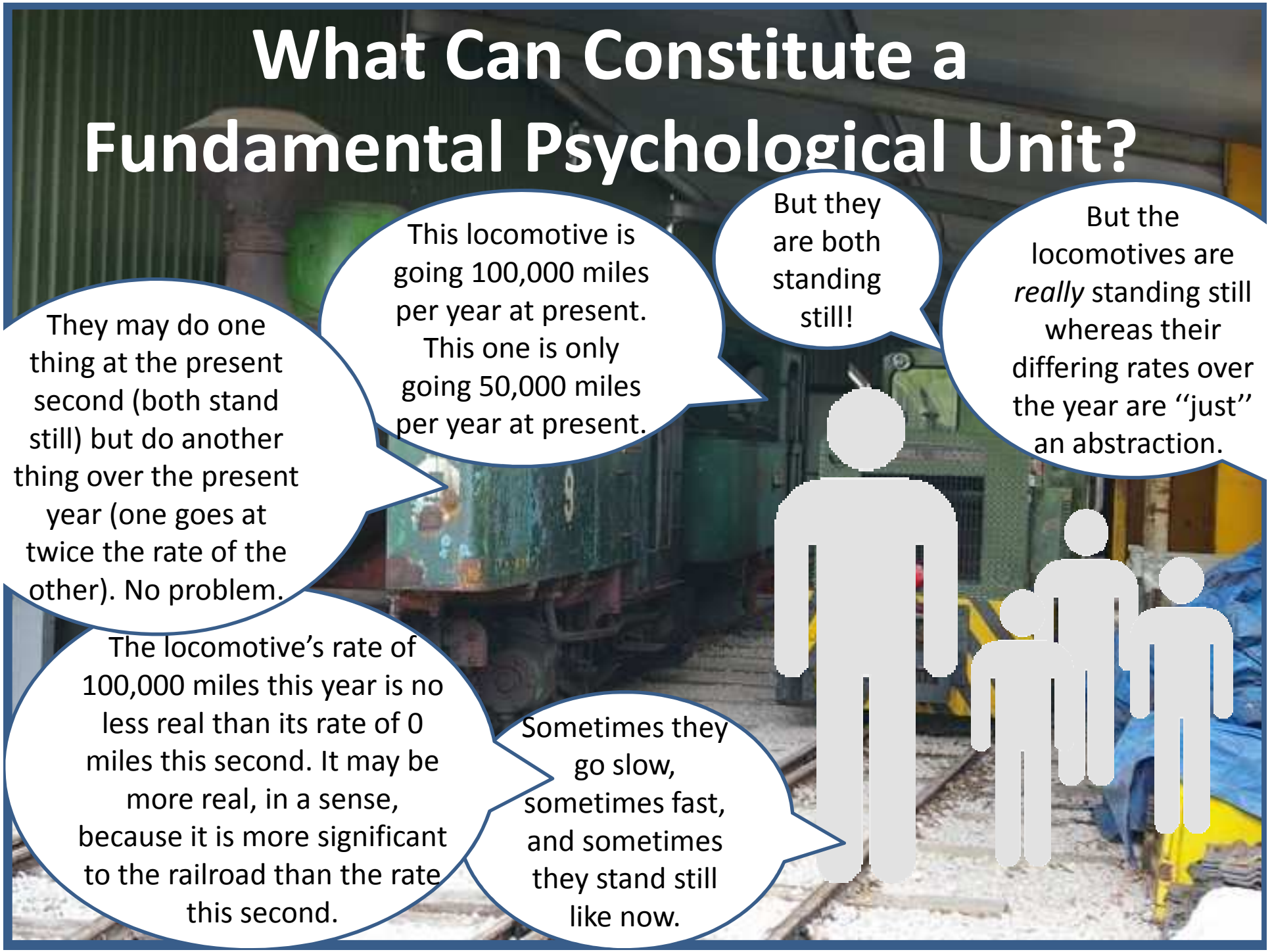
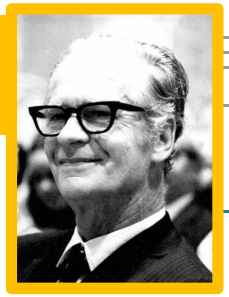
What Can Constitute a Fundamental Psychological Unit?



Contiguity



“To say that a reinforcement is contingent upon a response may mean nothing more than that it follows the response … conditioning takes place presumably because of the temporal relation only, expressed in terms of the order and proximity of response and reinforcement.” ’Superstition’ in the Pigeon (p. 168) 1948

“So far as the organism is concerned, the only important property of the contingency is temporal. The reinforcer simply follows the response… We must assume that the presentation of a reinforcer always reinforces something, since it necessarily coincides with some behavior” Science and Human Behavior (p. 85) 1953

— Most researchers agree

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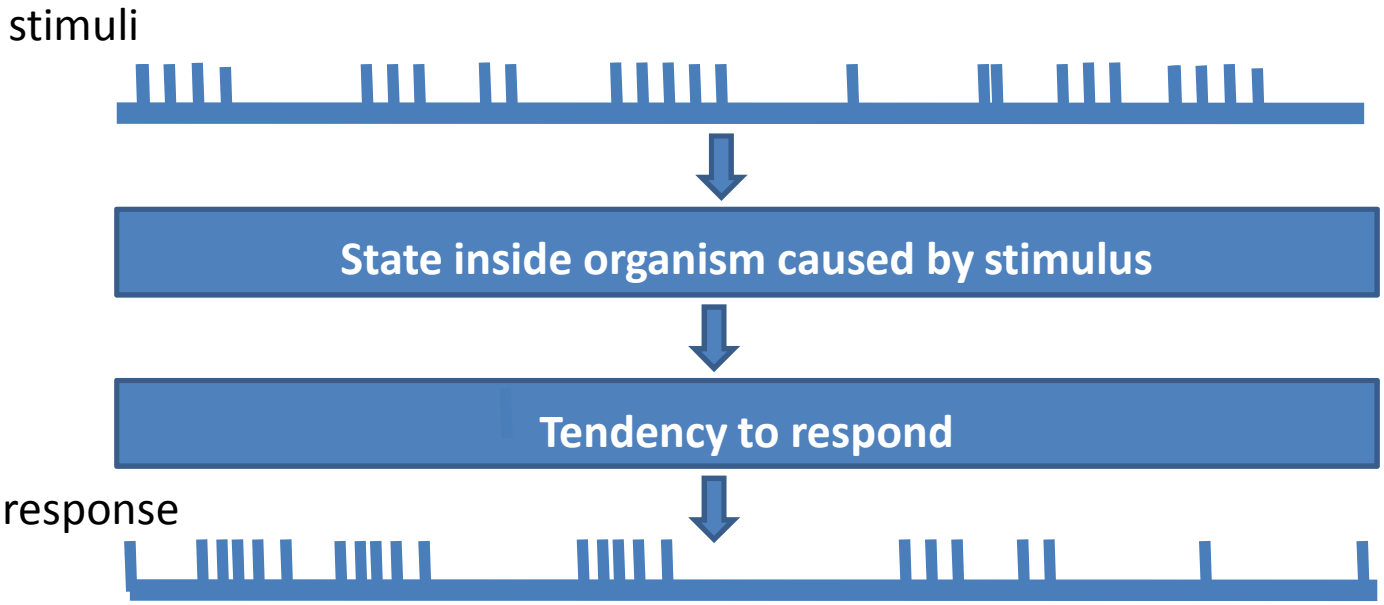
Mediating Events

— mediating events need to be postulated *to hold up contiguity* assumption

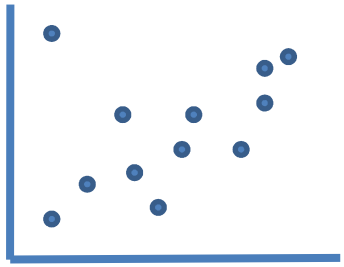


Events inside the organism hypothesized by molecular psychologists to mediate between stimulus and response to bring them into temporal contiguity

Molar: Rate of stimuli is causing rate of response

Contingency, no contiguity

	E1 Present	E1 Absent
E2 Present	√	
E2 Absent		√



- Rescorla (1968; 1988) : contiguity alone cannot suffice to specify a contingency because
- Contingency requires a comparison between at least two different occasions (temporally separated)
- Contingency cannot be judged in an instant
- Alternative: contingencies link
- Contrary to ‘‘order and proximity,’’ contingency: not a temporal relation
- Contingency links an environmental event to an activity and results in an increase or decrease in the activity
- Temporal relations are relevant in a different way, delays affect the clarity of a contingency and affect the variance in a correlation
- No need to invent hypothetical stimuli, responses etc

Molar Approach to Building a Science of Behavior based on two main principles:

1. All Behavior Takes Time !

2. All Behavior is Choice !

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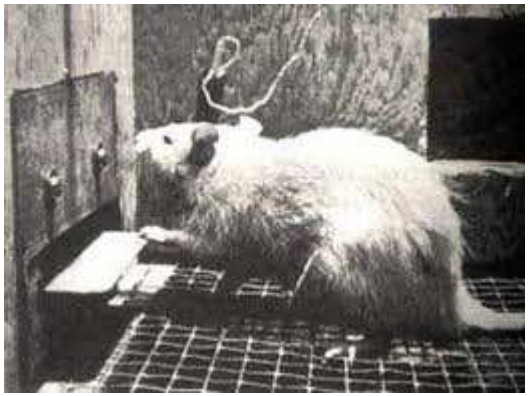
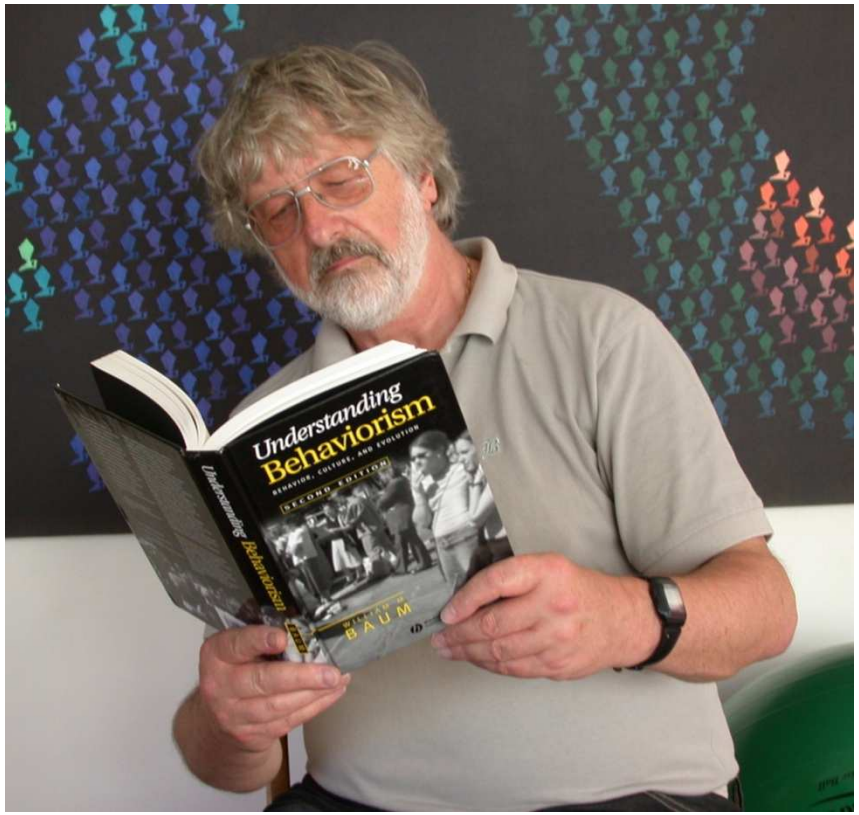
1. Behavior Takes Time



— To be alive is to behave; living things are always behaving

— In an hour of observation, we observe an hour of behavior

Behavior Necessarily Extended



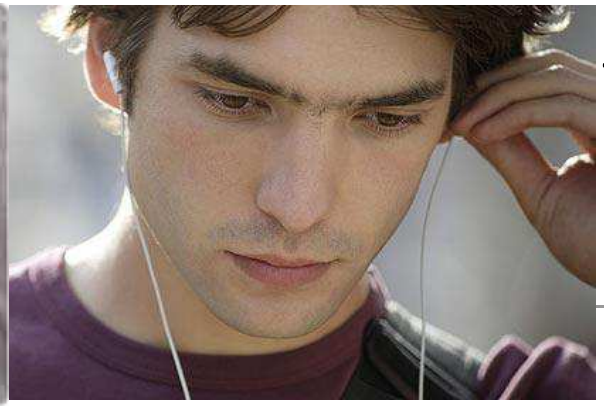
- What is he doing?
- Need to know before and after
- Measure extended activity (always)

Always

- What is the rat doing?
- Don’t know
- Pressing, touching, exploring
- Until you see what comes next
- And what went before

Activity (vs. momentary response)

- No such thing as "momentary behavior"
- Behavior is extended in time by nature
- How to identify an activity:
  - At a moment: maximum uncertainty
  - Larger time span → less uncertainty



- Reading – pretending, pressing – exploring

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A Molar View of Private Events

- They are behavioral patterns
- Look at extended time
- Loving right now;
  going miles/year
- The temptation to posit private events arises when an activity is viewed in too small a time frame, obscuring what the activity does
- Answer to many philosophical questions about thinking, sensing, and feeling
- Avoidance
- Molarism: whole organisms

!

Molar Approach to Building a Science of Behavior based on two main principles:

1. All Behavior Takes Time.

2. ***All Behavior is Choice.!***

2. All Behavior Is Choice

— Ubiquity of choice

— Universal availability of multiple alternatives

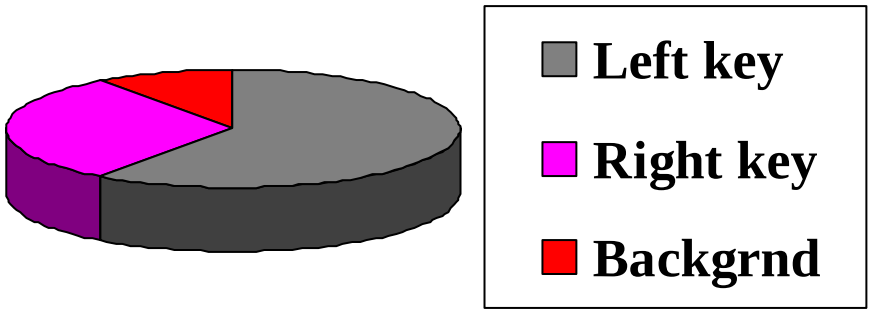
— Other behavior is possible in the situation

— To behave is to spend time in various activities—to choose, to allocate time

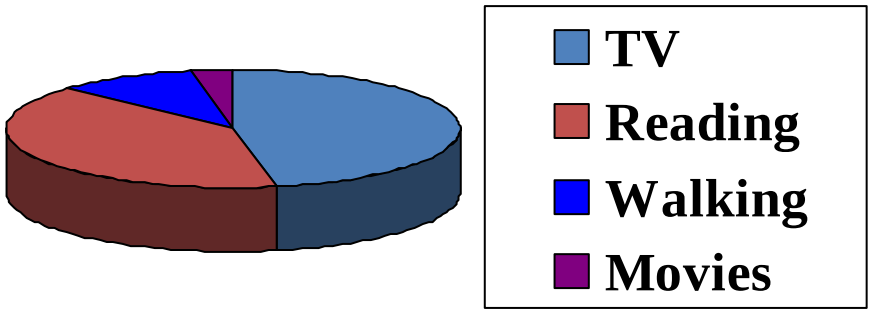
Allocation

— Cut up a pie: Time

Pigeon Pecking



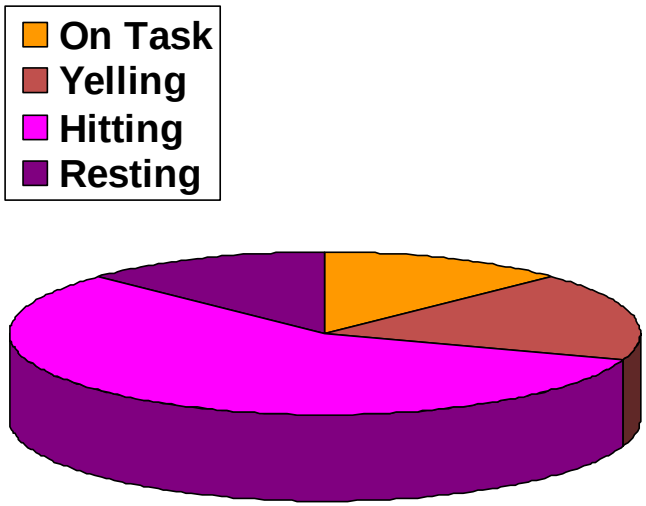
Recreation

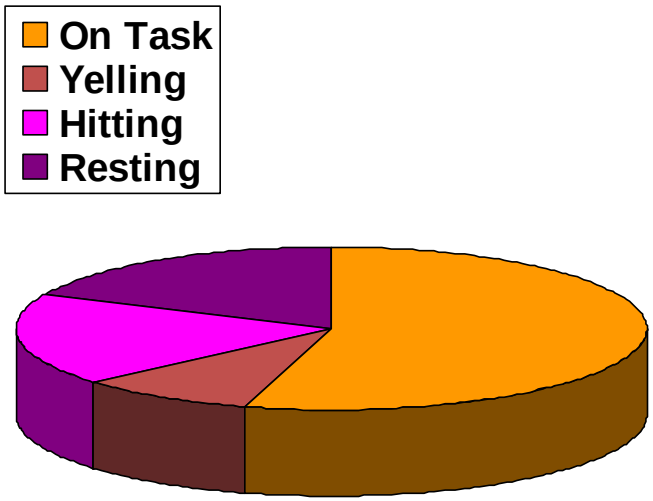


— Change conditions, change allocation

Interventions Change Allocation

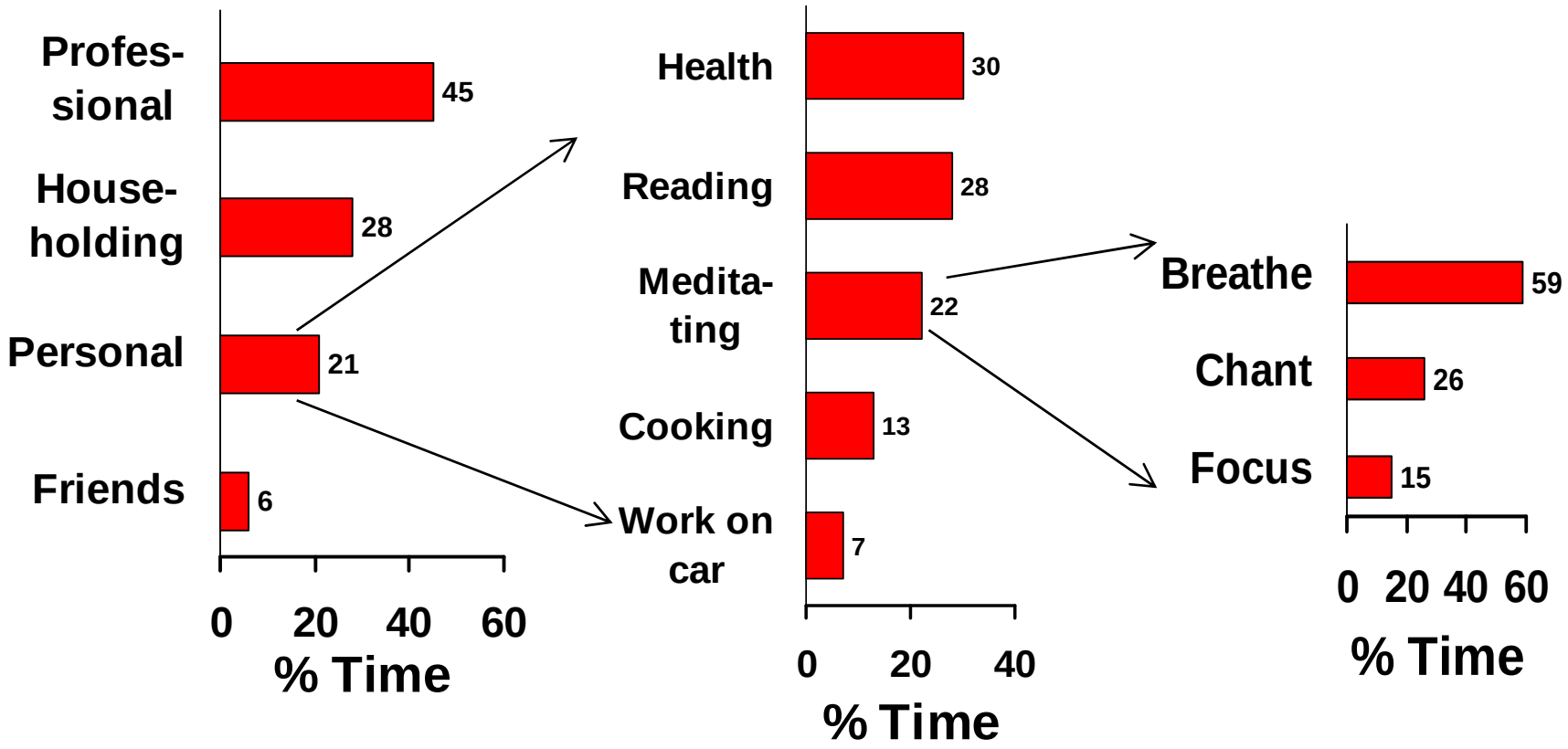
Classroom activity





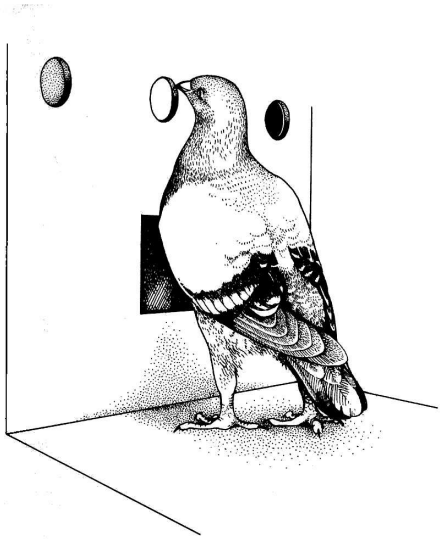
Allocation 1 ⟶ Allocation 2

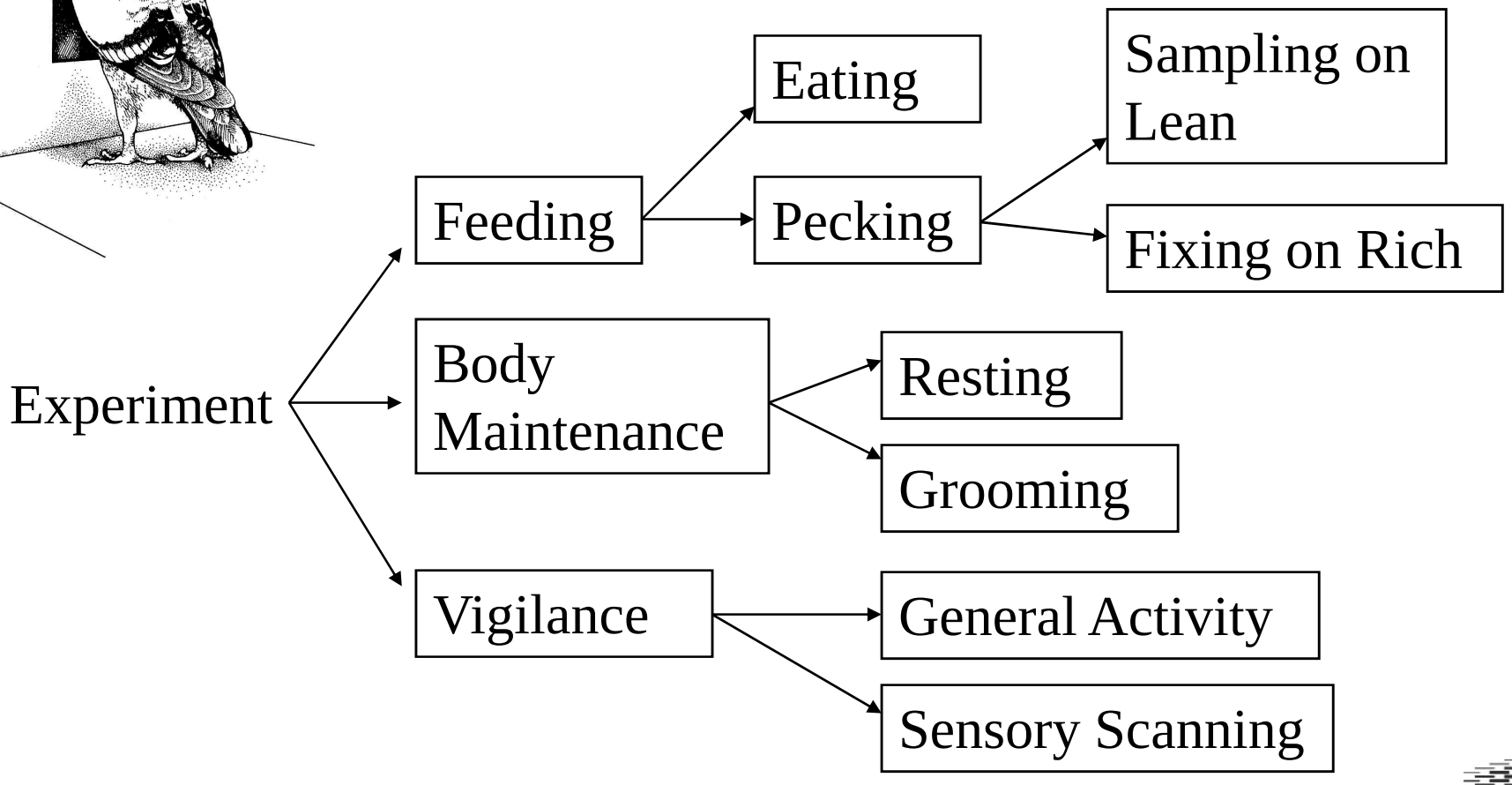
Nesting of Activities



- Extended activity; allocation among parts
- Parts are activities (less extended)
- Example: Love – kiss

Pigeon's Activities Nested





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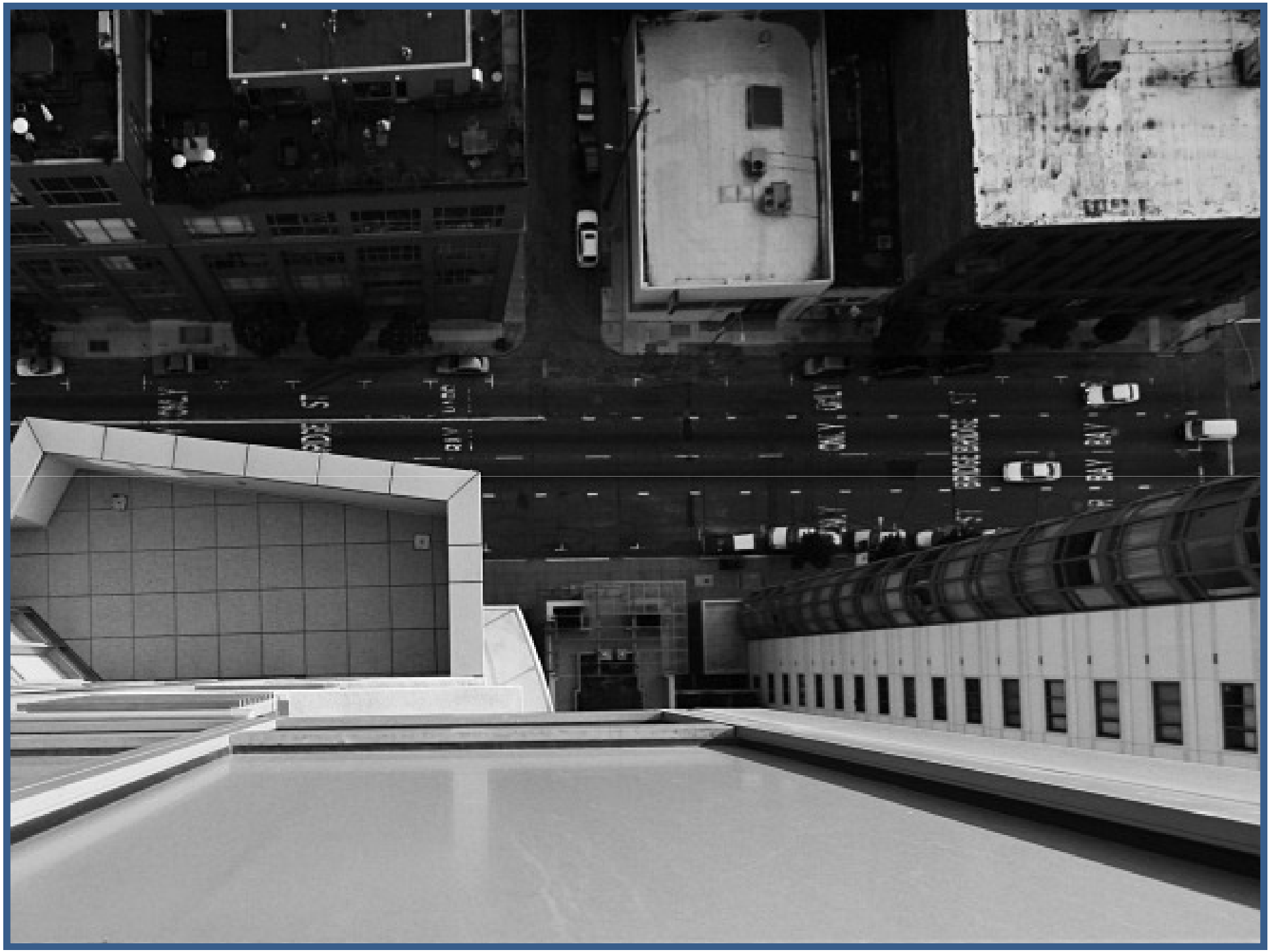
How to Explain Allocations?

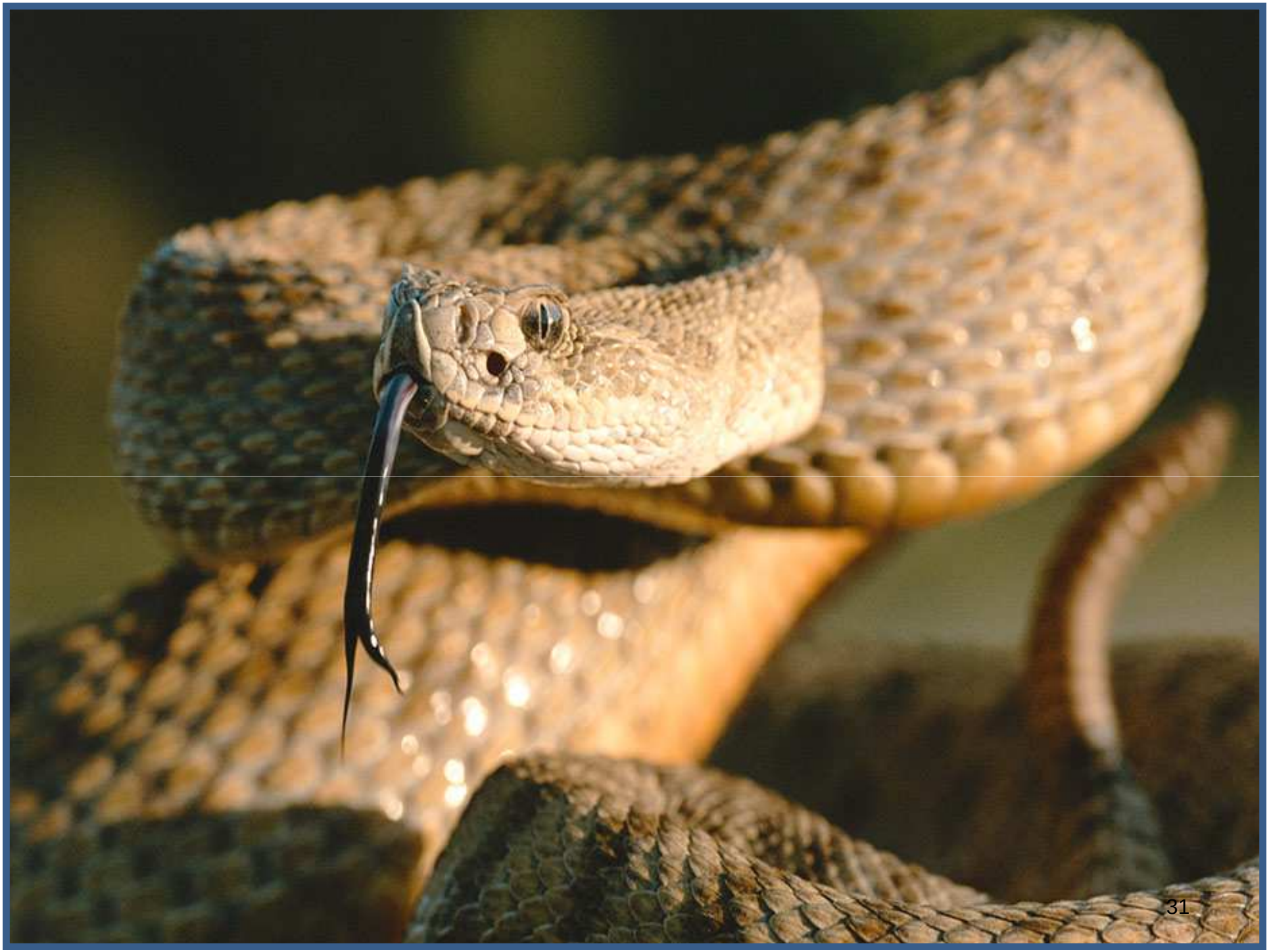
— Phylogenetically Important Events (PIEs) affect fitness (reproductive success)

— Health & Safety, Resources, Relationships, Reproduction

— Ex: Illness, food, approval, mate

Many different PIEs





Induction

— PIEs are “important” (effective) due to natural selection

— PIEs and PIE-related events induce PIE-related activities

— *Not* elicit (*no one*-to-*one* relation)

Two functions of PIEs

1. PIEs as inducers
2. PIEs enter into contingencies (as results)
   - — Contingency: activities & events
   - — Contingency selects behavior originally induced

Conclusion

The Molecular View…

…assumes discrete responses, discrete stimuli, and contiguity between those events

…was designed to explain short-term, abrupt changes in behavior (as in cumulative records)

…does poorly when applied to temporally extended phenomena because its theories and explanations almost always resort to hypothetical constructs to deal with time spans

The Molar View…

… is about activities extended in time, extended contexts, and extended relations

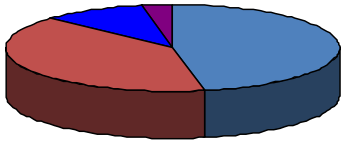
…takes into account that behavior always takes time (no implausible abstraction of momentary responses) !

…is more parsimonious than 2-factor theory (no hypothetical events)

…offers a plausible account of mental- and private-event terms (suggesting that those are induced by the individuals' observation of extended behavioral patterns) !

…relates behavior analysis and evolutionary theory to each other

Conclusions Cont'd.



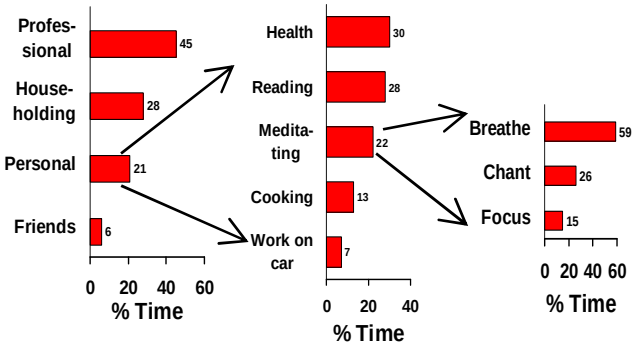
"A job getting done" → function (vs. structure)

Molar behaviorism:

— Activities as parts; parts as activities

— Time allocation among parts

— PIEs function as inducers and as results



— Any specific molar or molecular theory may be invalidated by experimental test (not the paradigm; a new theory may always be invented within the paradigm)

— The molar paradigm surpasses the molecular paradigm by producing theories and explanations that are more plausible and elegant

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Some References

Baum, W.M.(1995) Introduction to molar behavior analysis, Mexican JBA

Baum, W.M.(1997) The trouble with Time, in Hayes & Ghezzi, Behavioral Epistemology

Baum, W.M.(2002) From molecular to molar: A paradigm shift in behavior analysis, JEAB

Baum, W.M.(2003) The molar view of behavior and its usefulness in behavior analysis, BA Today

Ferster, C. B., & Skinner, B. F. (1957). Schedules of reinforcement. New York: Appleton-Century-Crofts.

Rachlin, H. & Frankel, M. (2009) Taking pragmatism seriously: A review of William Baum's understanding Behaviorism: Behavior, culture, and evolution (second edition)

Rachlin, (1976). H. Learning and behavior. W. H. Freeman

Staddon, J. E. R. (1977). Schedule-induced behavior. In W. K. Honig, & J. E. R. Staddon (Eds.), Handbook of operant behavior (pp. 125–152). Englewood Cliffs, NJ:Prentice-Hall.

Skinner, B. F. (1938). Behavior of organisms. New York: Appleton-Century-Crofts.