12 ka to 2 ka transition
- food producing communities
- synchronous origins
- theory of origins
  - “solitary genius”
  - Childe’s “oasis”
  - population pressure
  - climate change
  - social theories
  - “readiness” v. accident
- domestication =
  - a species modified in …whole or in part by human activity
e, h, λ
- selection revisited
- co-evolution
  - who benefits?
- transformation of plant/animal life
- transformation of human life
  - health consequences…
  - population growth = very successful!

full transition in 10ka!

When?
Where?
How?
Why?

no middle ground?

dependence on agriculture in “traditional” pops
>40-50% of diet is domesticated plants/animals
Çatal Höyük Plan
Map, 10.5-8.5 ka
large community size
Çatal Höyük Reconstruction permanent architecture

- sedentism = practice of establishing a permanent, year-round settlement

- Neolithic = period when people began to use ground stone tools, ceramics and began to cultivate plants
  - ceramics
    - completely new technological concept
    - “additive” vs. “reductive”
  - BEWARE! hunter-gatherers used ceramics too

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synchronous, independent origins of agriculture

- SW Asia & East Asia 12-8 ka
- Americas 10-8 ka
Origins of Agriculture: Early Theories

V. Gordon Childe’s “oasis”

“solitary genius”

Contemporary Theories: Social Control

many features in common with “solitary genius”

Contemporary Theories: Population Pressure + Younger Dryas

many features in common with Childe’s “Oasis Theory”

Contemporary Theories: “readiness hypothesis” v accidental experimentation

Hadza root digging
12 ka to 2 ka transition
food producing communities
synchronous origins
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domestication =
a species modified in
...whole or in part by human activity
e, h, \( \lambda \)
selection revisited
do-co-evolution
who benefits?
transformation of plant/animal life
transformation of human life
health consequences...
population growth = very successful!

plant/animal domestication...
a species that has been modified in whole or in part by human activity
e =
increase energy returned from a unit of food
h =
decrease the time it takes to handle/process food
\( \lambda \) =
increase the rate at which food is encountered

modification = enhance economic characteristics (e, h, \( \lambda \))

plants...
e \( \rightarrow \) large seeds/fruits, small non-edible parts
h \( \rightarrow \) seeds detach only with human intervention
\( \lambda \) \( \rightarrow \) increase stand size/homogeneity, extend geographic range

animals...
e \( \rightarrow \) increased meat, milk, wool production
h \( \rightarrow \) decrease body size, reduce aggressiveness
\( \lambda \) \( \rightarrow \) constrain movement of herd animals (penning)

human activity = intervention in life cycle and reproduction
regulation of breeding (artificial selection)
regulation of dispersal

assisted reproductive technology in modern agro-business!
domestication and selection... 
what is doing the selecting?

Survivors

coevolutionary relationship... 
who benefits?

guaranteed reproduction & protection from predators!

coevolutionary relationship: who benefits?
Neolithic decline in quality of life... 
disease, poor nutrition, shorter life spans, 
warfare, less leisure time

dental disease in an early Neolithic mandible (ouch!)

treatment in life cycle and reproduction of 
plants/animals creates dependence on humans, while 
human populations become dependent on 
domesticates (irreversible?)

domesticates winning?
but agriculture still very successful  
create new K  

?  

population size  
K  

K  

time