Human evolution

Patterns of evolution

Our recent history

Sociality

Learning about the past

Outline

Humans as an example

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Exit
Madison Avenue
& 42 Street
Open M-F 6:30am-7:30pm
Track

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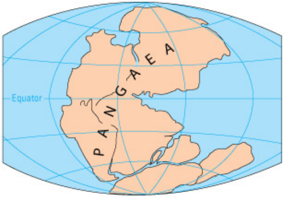
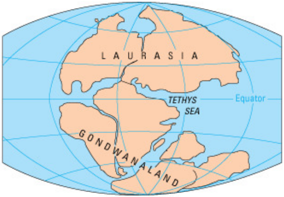
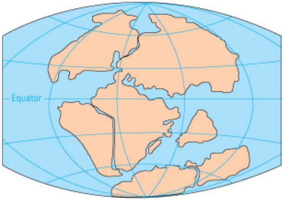


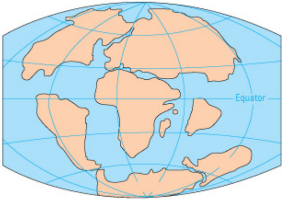
PERMIAN
225 million years ago



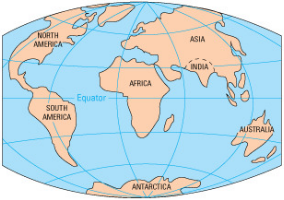
TRIASSIC
200 million years ago



JURASSIC
150 million years ago



CRETACEOUS
65 million years ago



PRESENT DAY

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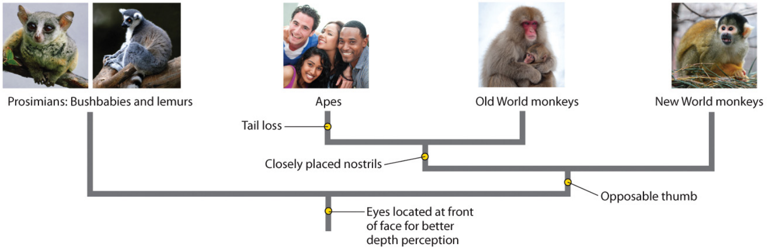

(Left to right) George Holton/Science Source; Penelope Dearman/Getty Images; Yellow Dog Productions/Getty Images; Patrick Shyu/Getty Images; Cavan Pawson/ANL/REX/Shutterstock

Figure 23.1
Biology: How Life Works

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Outline

Apes

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Russell Watkins/Shutterstock

Figure 23.13 (Part 2)
Biology: How Life Works

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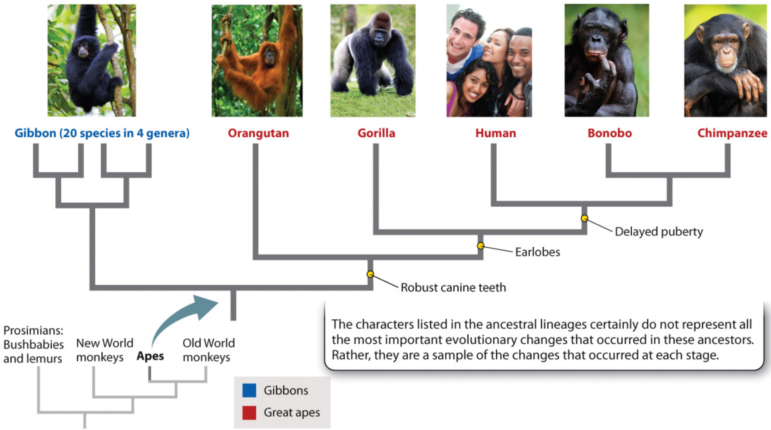

(Left to right) Zoonar/K. Jorgensen/AGE Fotostock; S Sailer/A Sailer/AGE Fotostock; J & C Sohns/ AGE Fotostock; Yellow Dog Productions/Getty Images; Steve Bloom Images/Alamy Stock Photo; FLPA/Jurgen & Christi/AGE Fotostock

Figure 23.2
Biology: How Life Works

Endangered gibbons

PalmOilDetectives.Com

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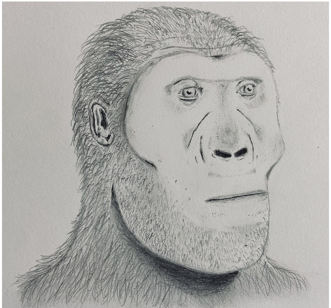

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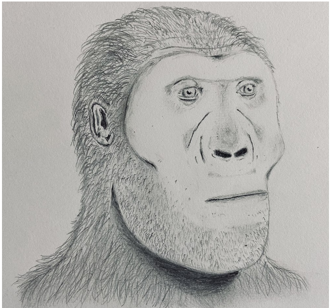

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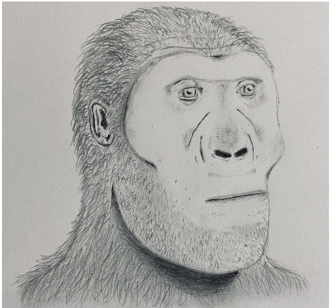

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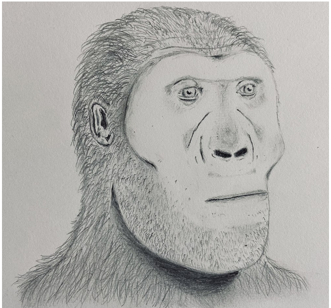

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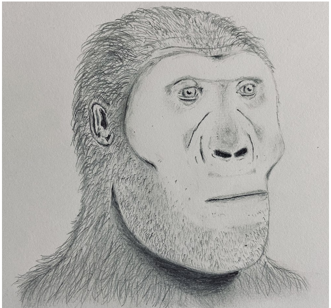
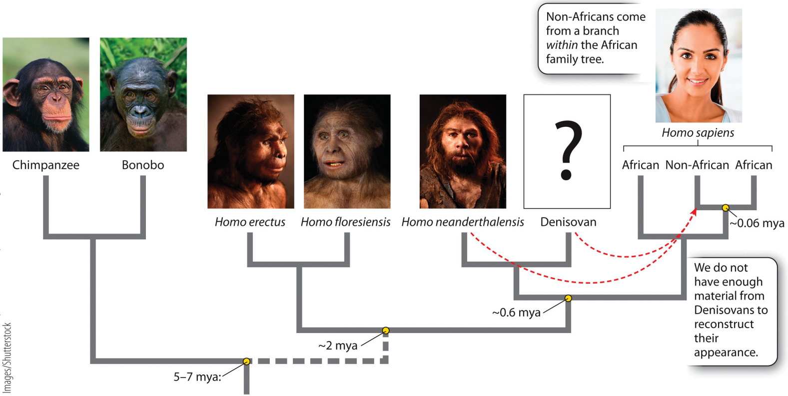
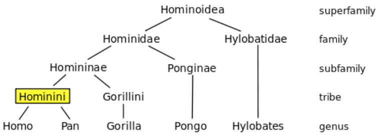




(Left to right) Fuse/Getty Images; INTERFOTO/Alamy; Sylvain Entressangle & Elisabeth Daynes/Science Source; Sebastien Plailly/Science Source; Sylvain Entressangle & Elisabeth Daynes/Science Source; Aila Images/Shutterstock

Figure 23.9
Biology: How Life Works

Taxonomy



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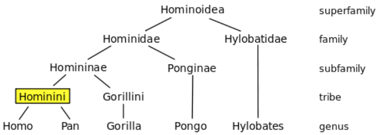

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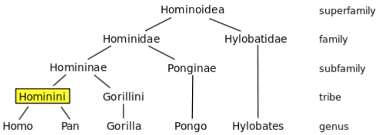

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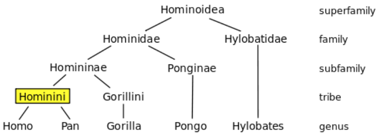

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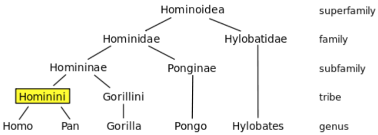

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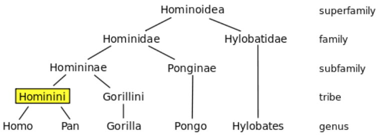

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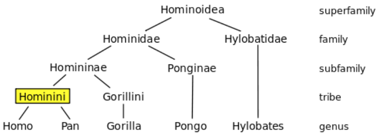

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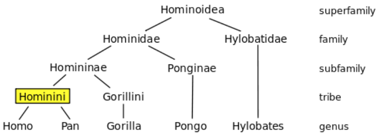

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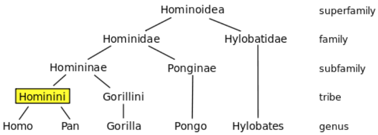

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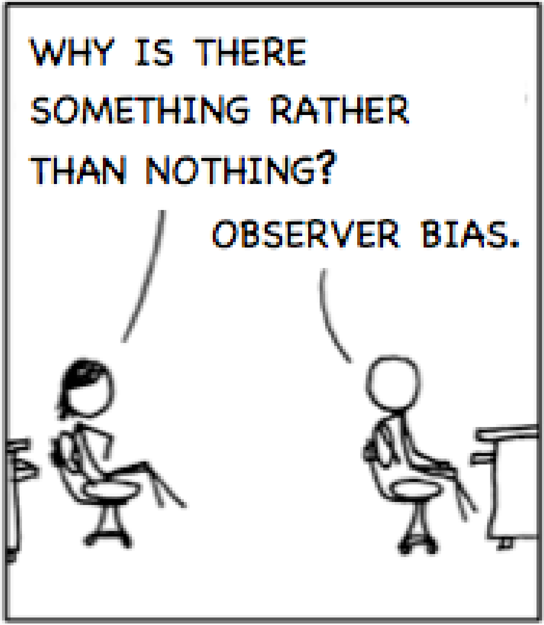
Observer bias is everywhere! (Extra)



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  - Adaptation to walking on the ground instead of swinging through trees
  - Adaptation for keeping cool
  - Adaptation for harvesting food
  - Adaptation for carrying food

More radiation and contraction

- *H. ergaster* probably out-competed and replaced several related species, then radiated

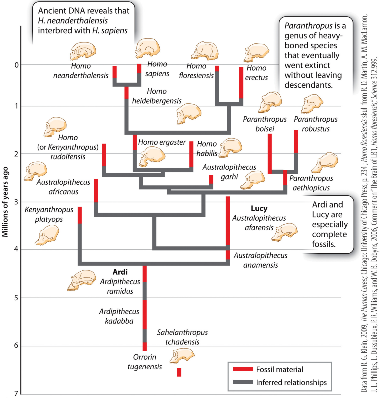

Figure 23.6
Biology: How Life Works

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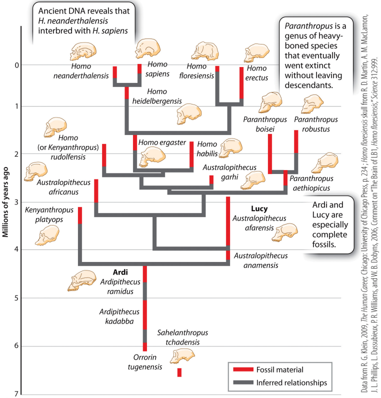

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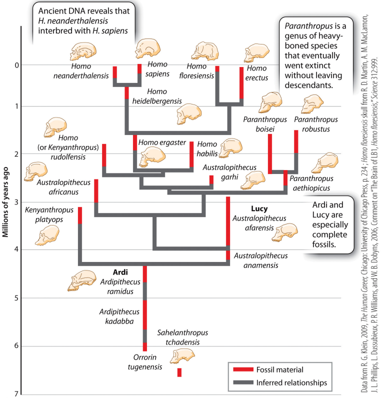

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Outline

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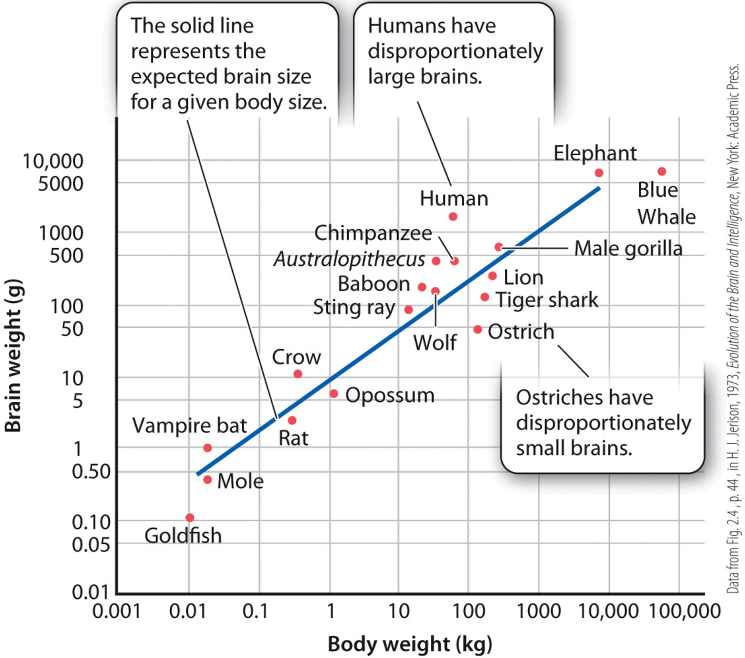

Figure 23.14
Biology: How Life Works

Brain and body size

- What is missing from the book's picture?

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  - * Dolphins!

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- What do we know about these animals?

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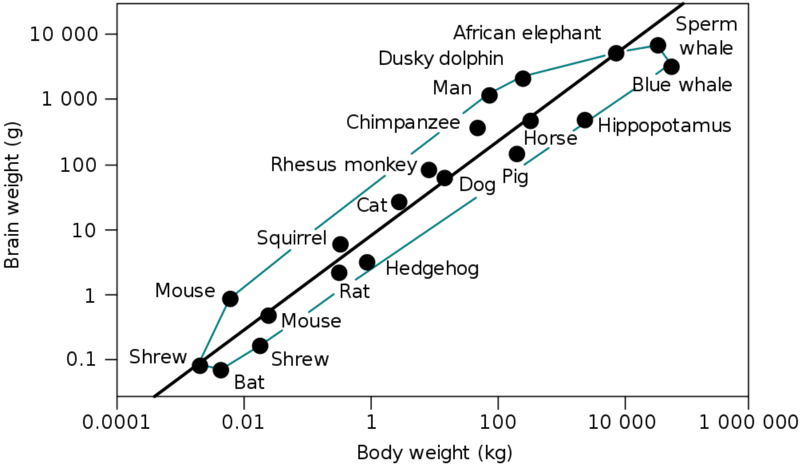
Brain weight (g)
10 000
1 000
100
10
1
0.1
Body weight (kg)
0.0001
0.01
1
100
10 000
1 000 000
African elephant
Sperm whale
Dusky dolphin
Blue whale
Man
Chimpanzee
Hippopotamus
Horse
Rhesus monkey
Dog
Pig
Cat
Squirrel
Hedgehog
Rat
Mouse
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Shrew
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Bat

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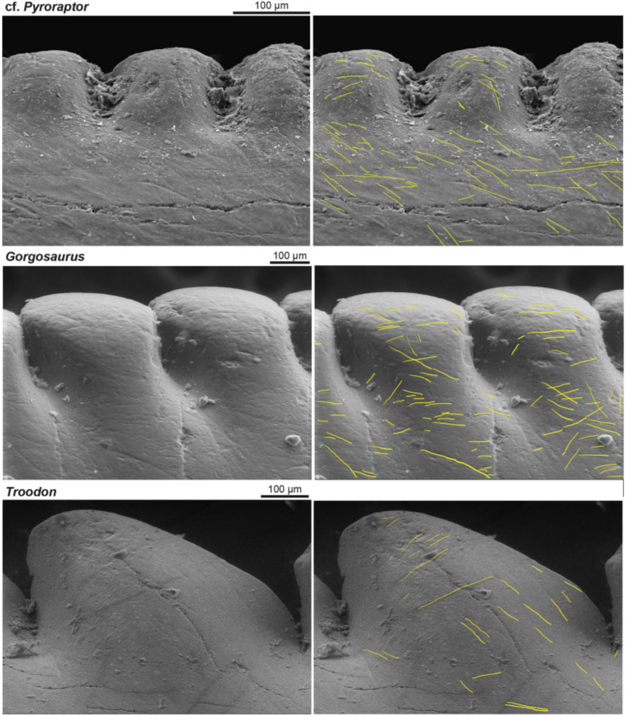
cf. Pyroraptor
100 µm
Gorgosaurus
100 µm
Troodon
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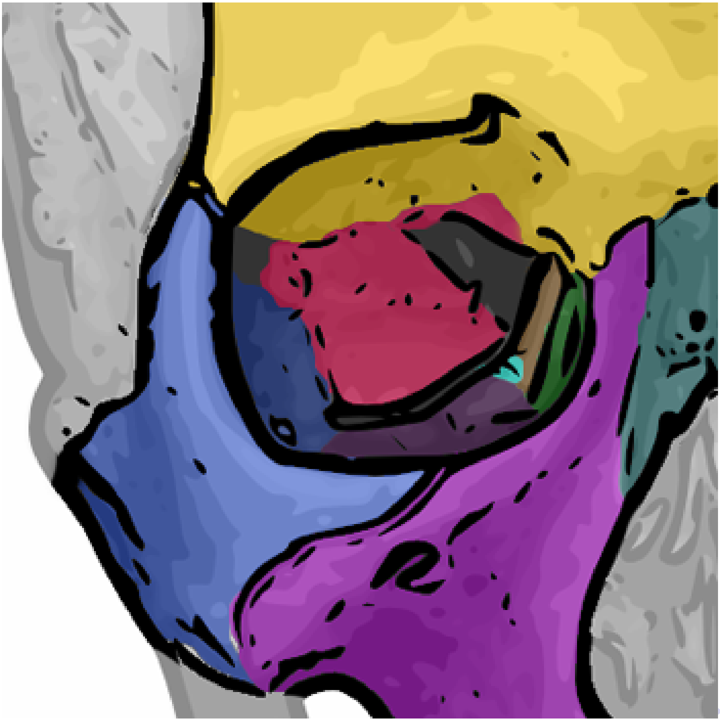

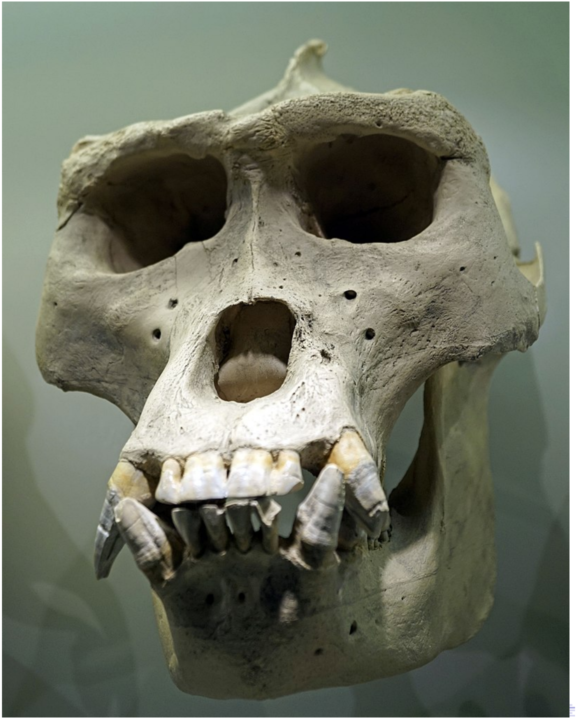

Sexual dimorphism

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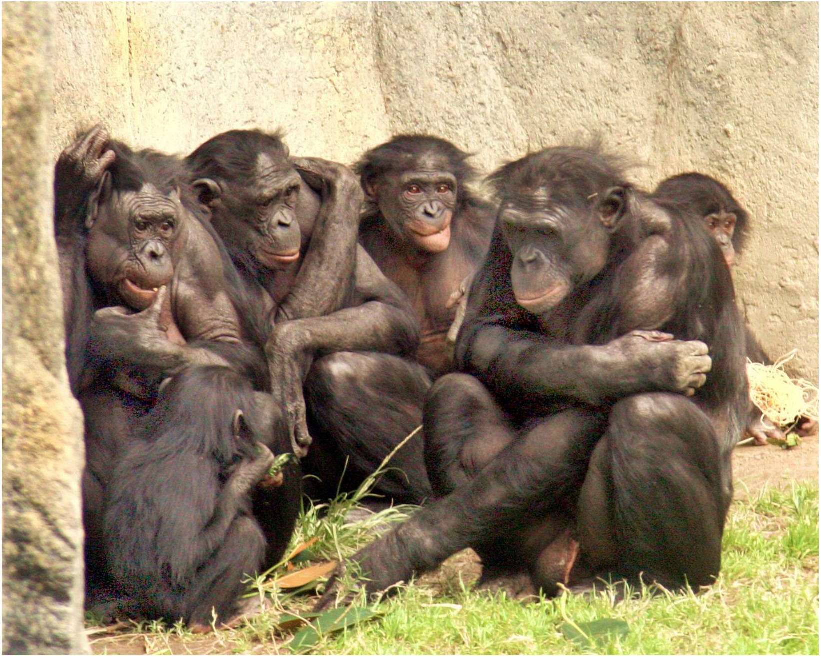

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- We got here using the same rules of natural selection as everyone else
  - Things may be different *now*, but even that is not so clear
- Adaptation does not move in a straight line
  - Changing conditions lead to opportunities for new adaptations
  - New adaptations *themselves* can be an important cause of changing conditions
    - Innovations, or co-evolution with other taxa

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