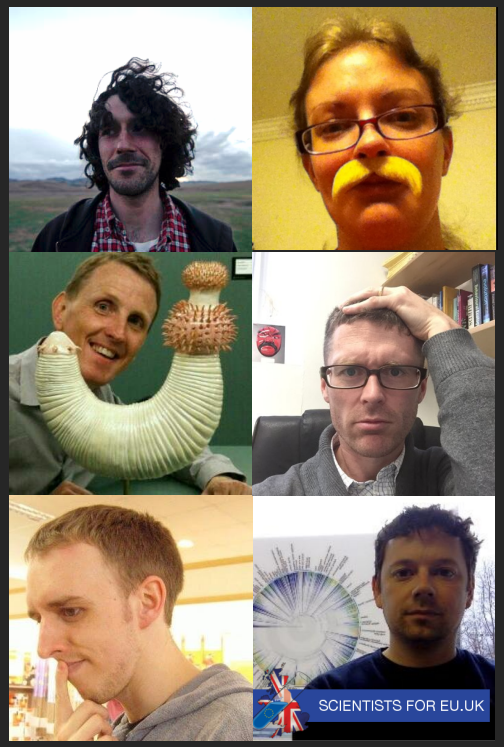
New approaches to disparity-through-time analysis

Thomas Guillerme

t.guillleme@imperial.ac.uk  @TGuillerme

Acknowledgements

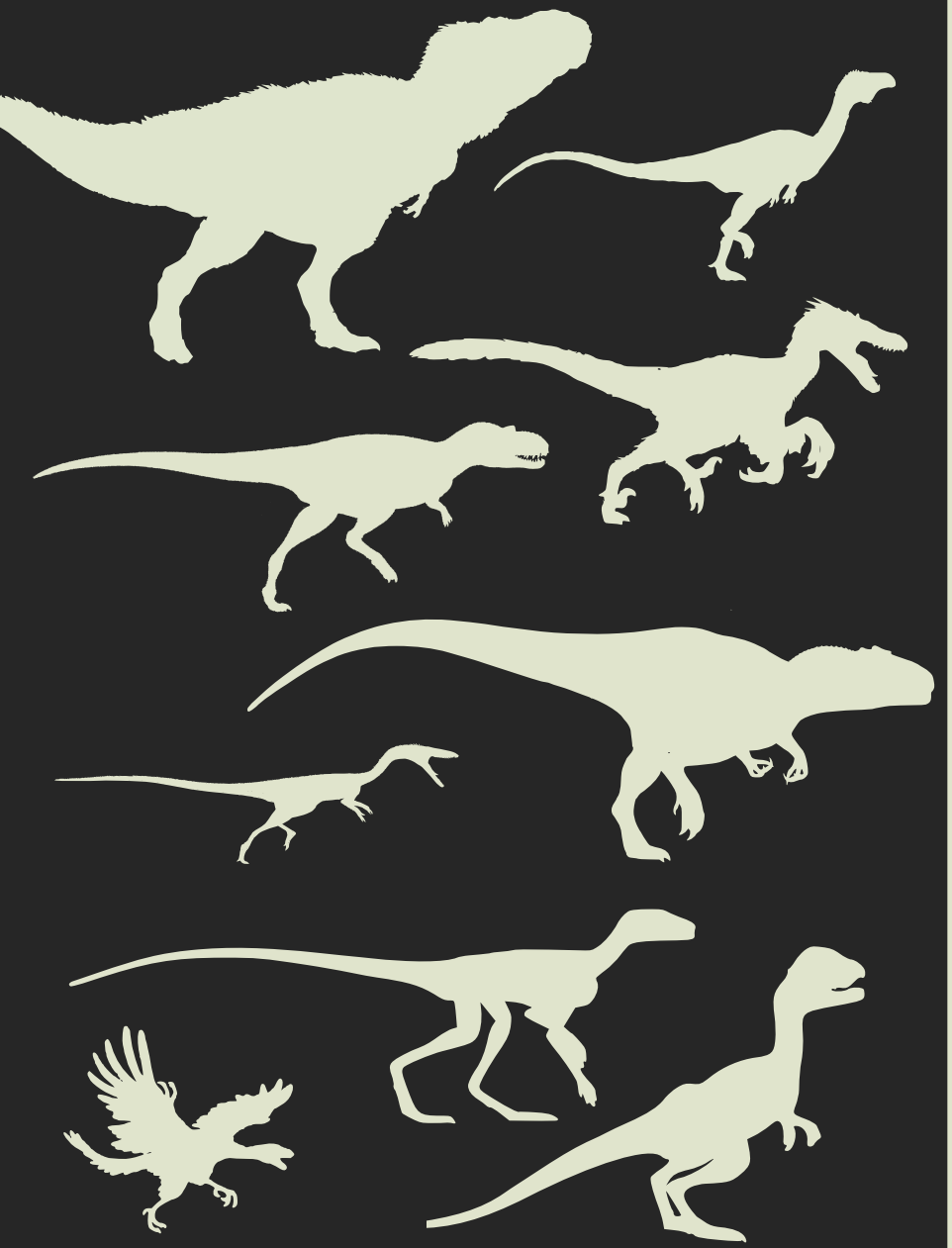


Martin Brazeau
Natalie Cooper
Phil Donoghue
Andrew Jackson
Graeme Lloyd
Gavin Thomas

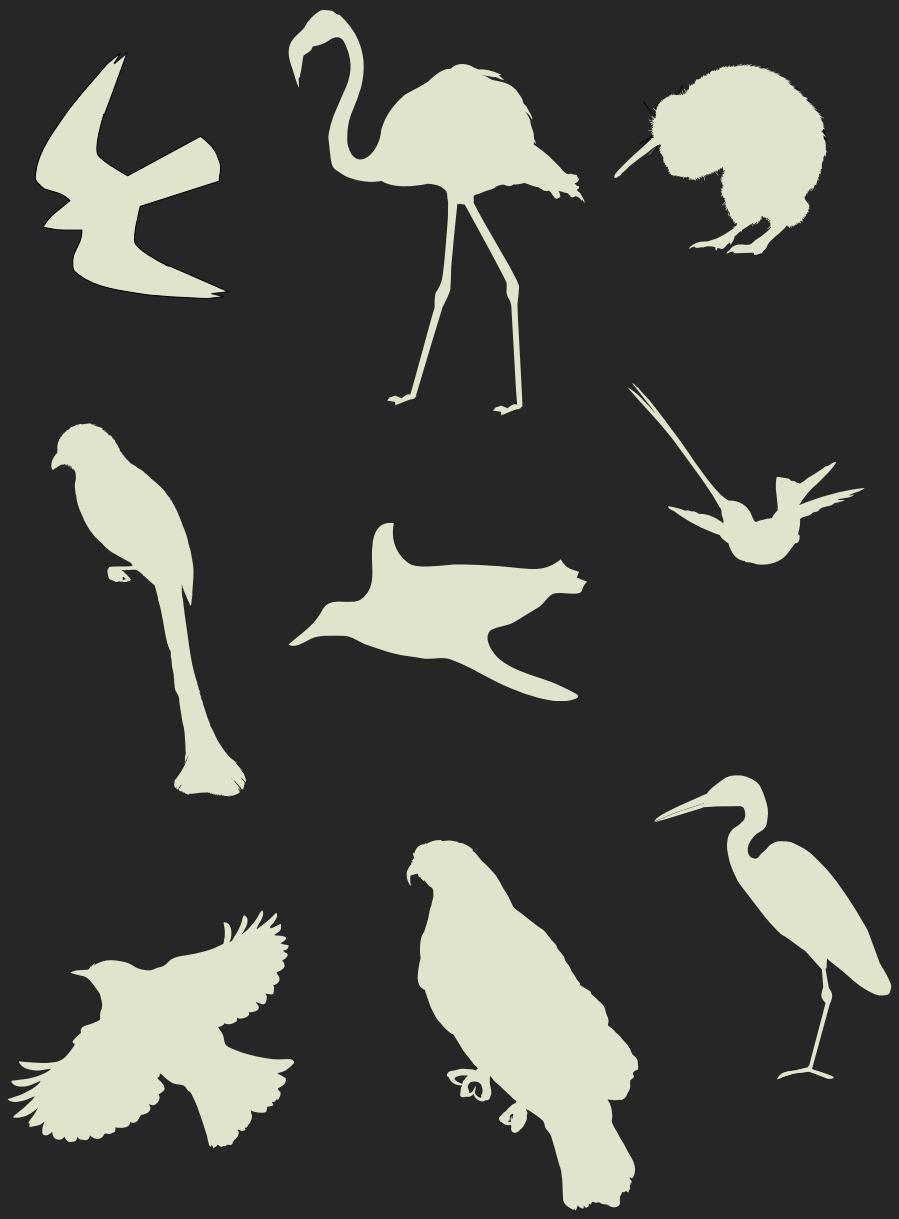




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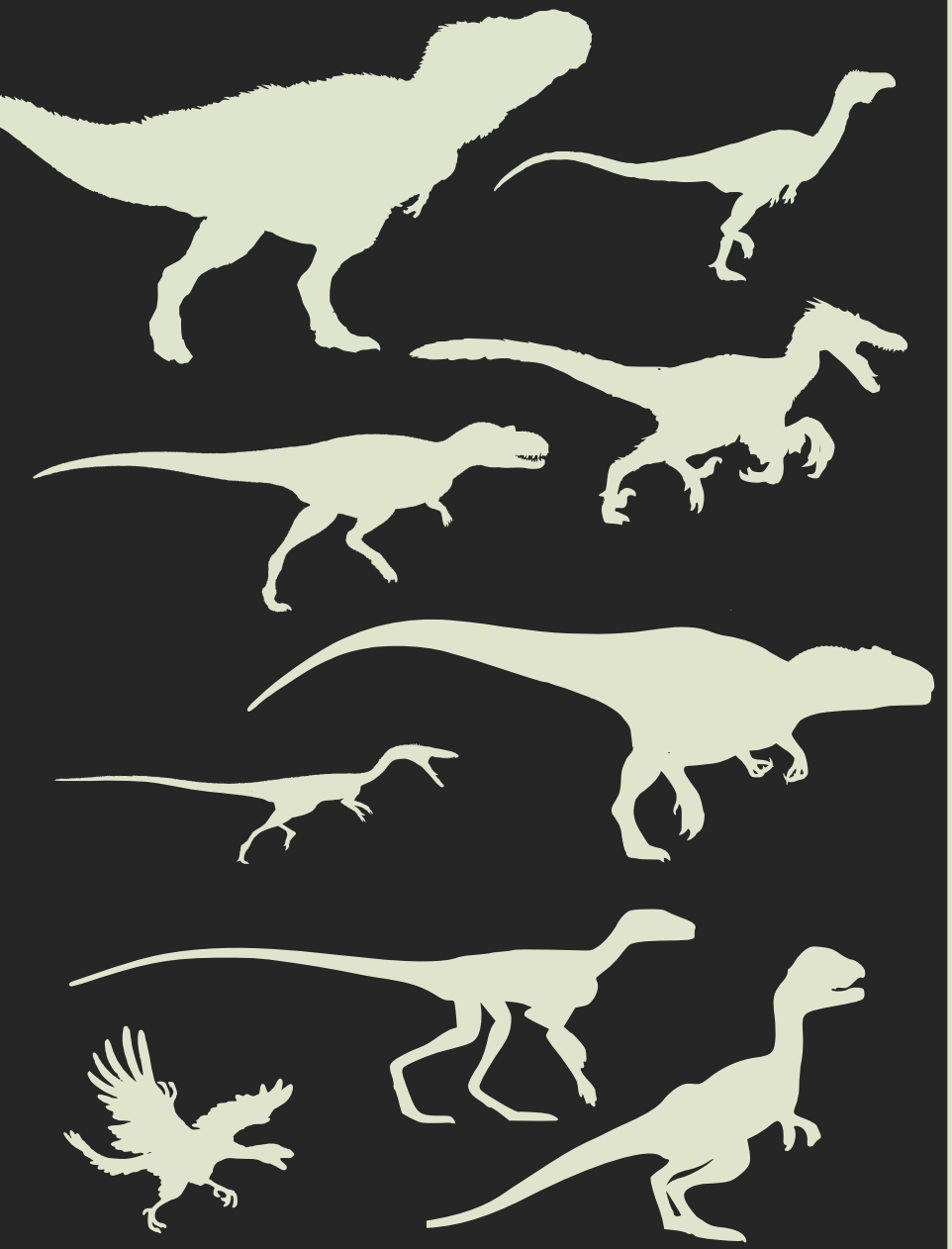


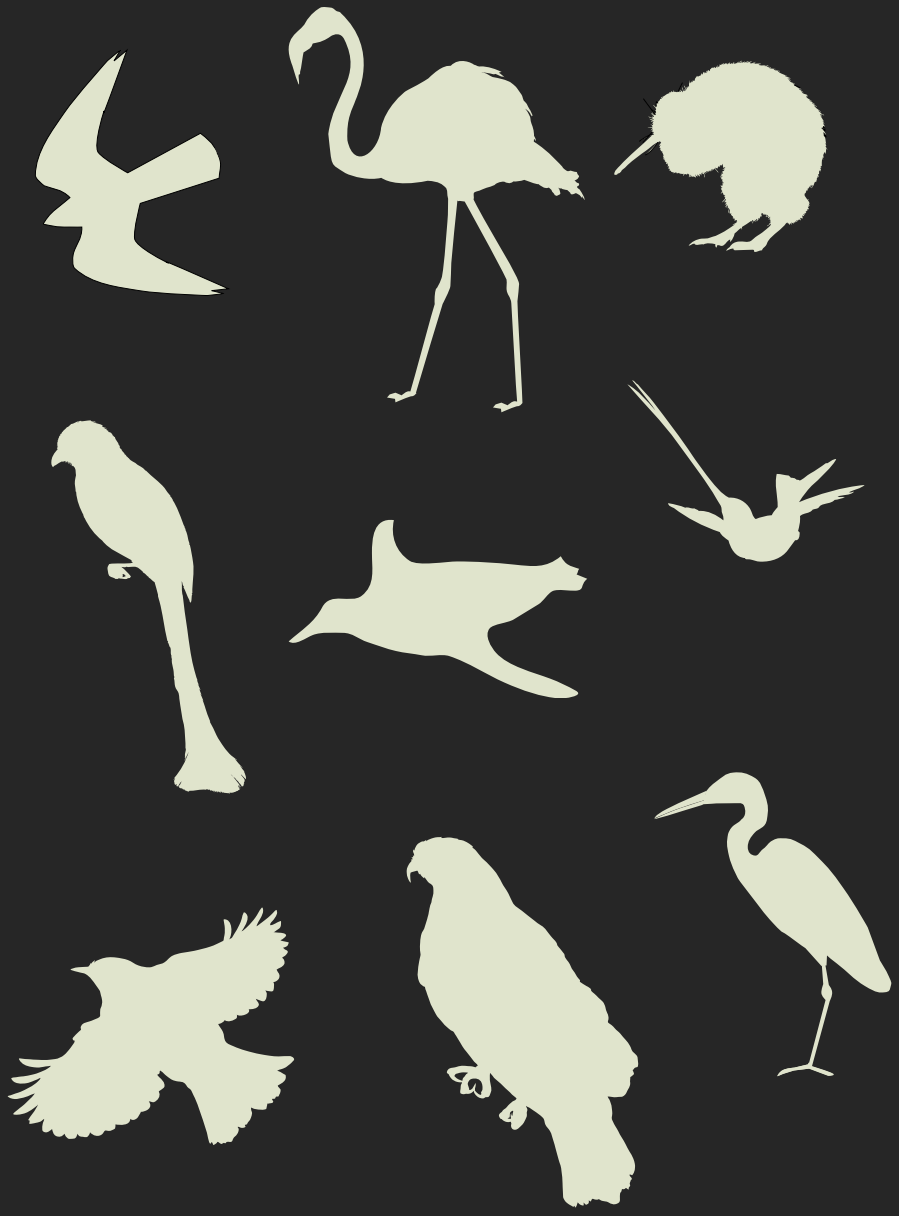
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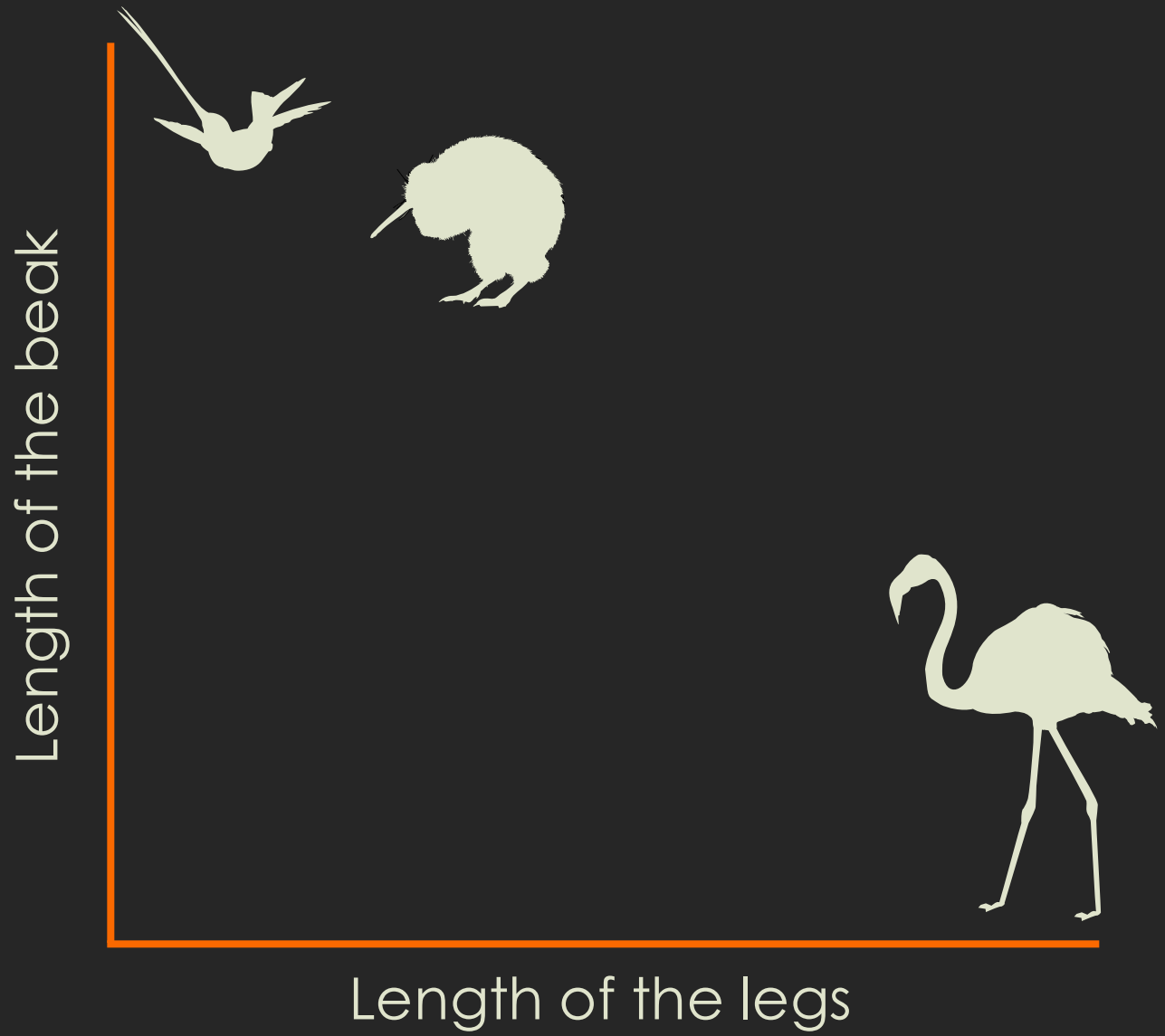
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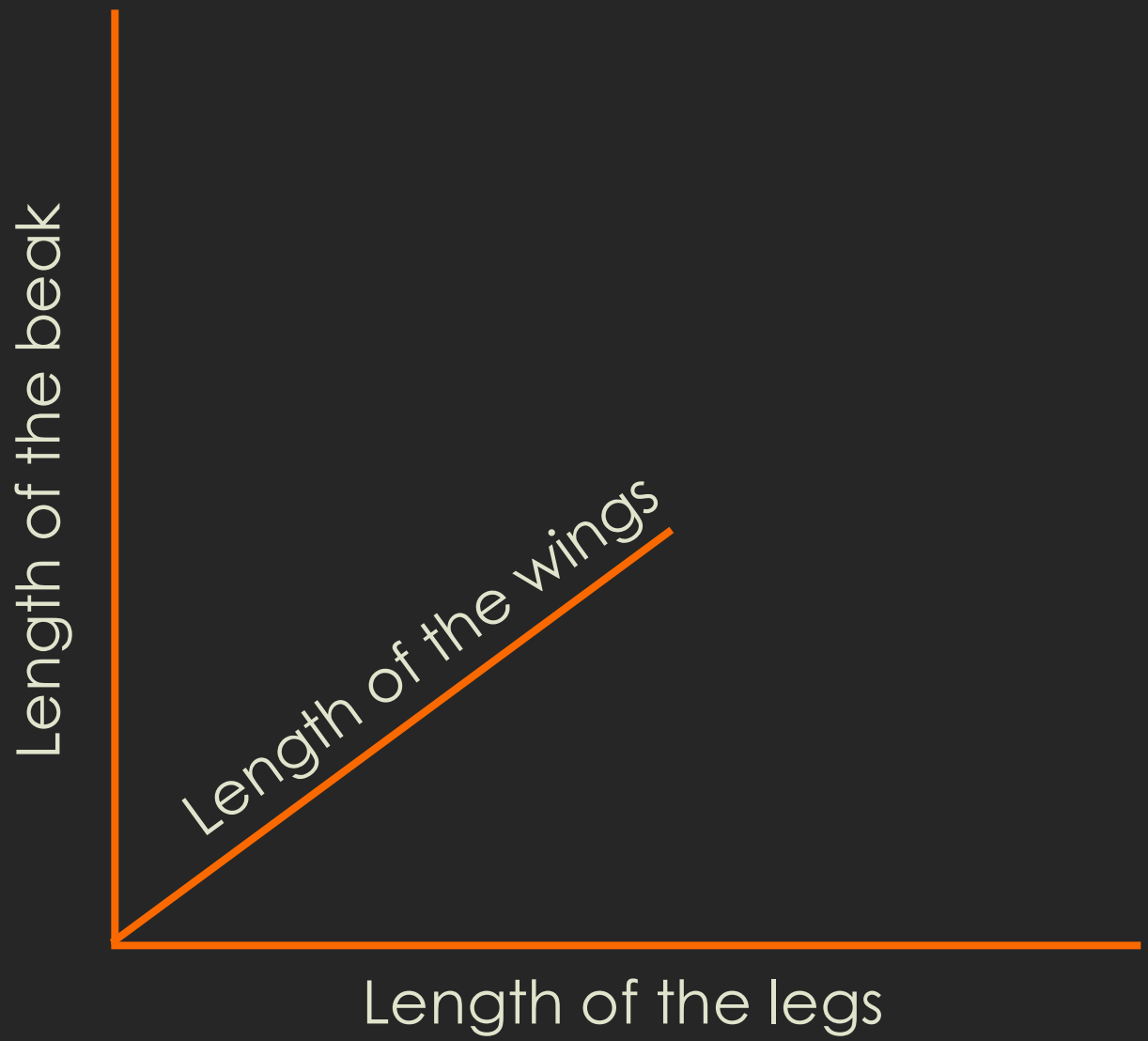
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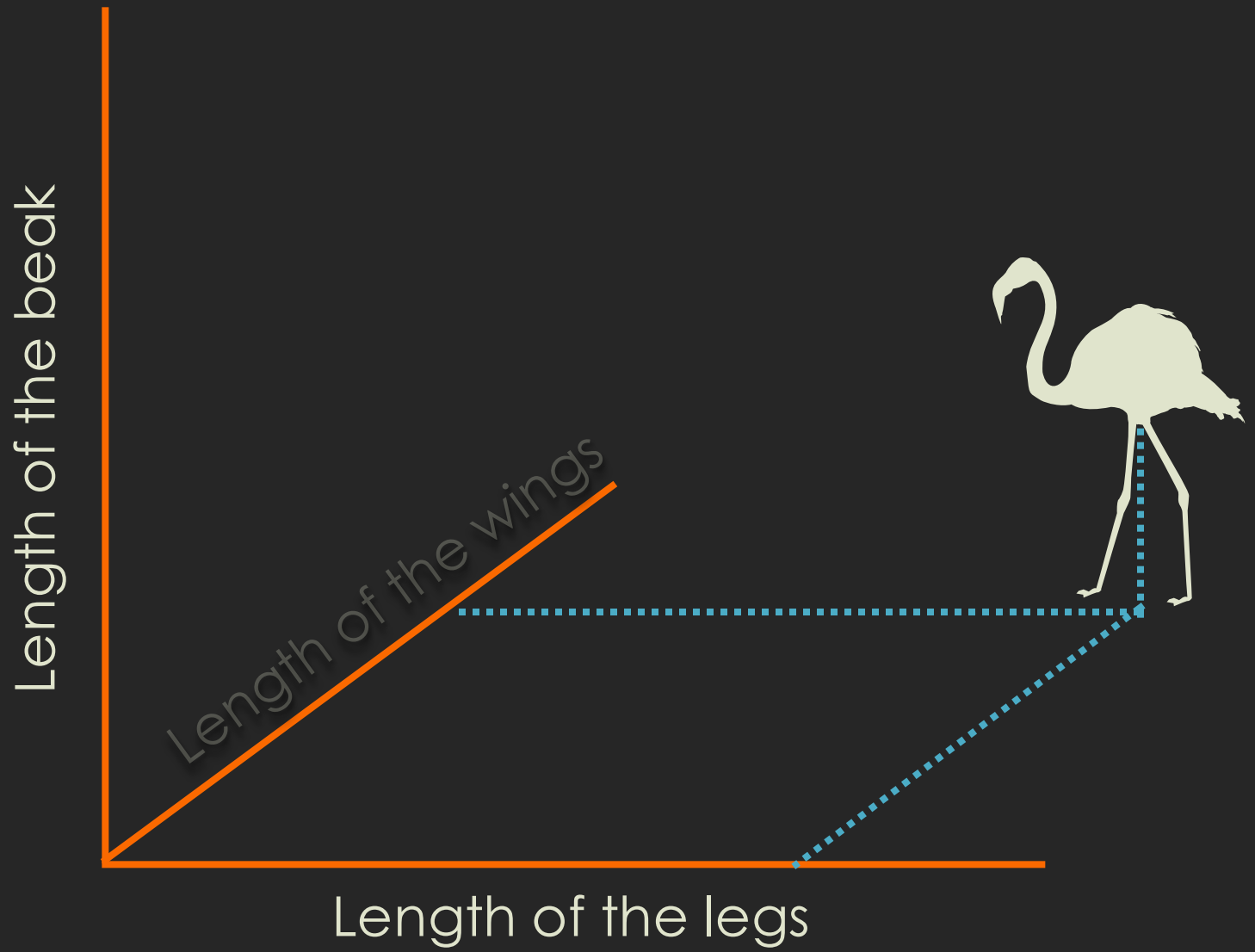


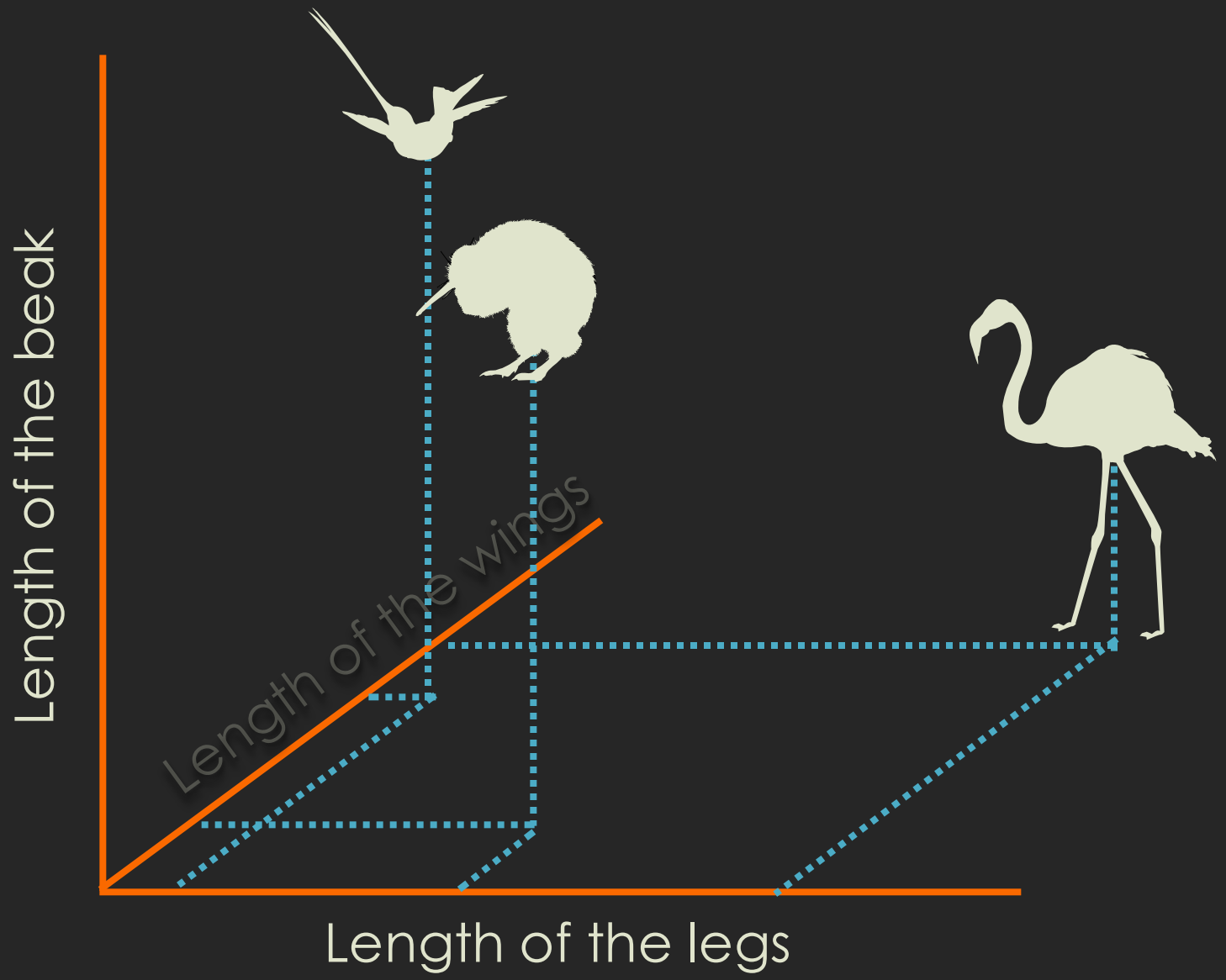


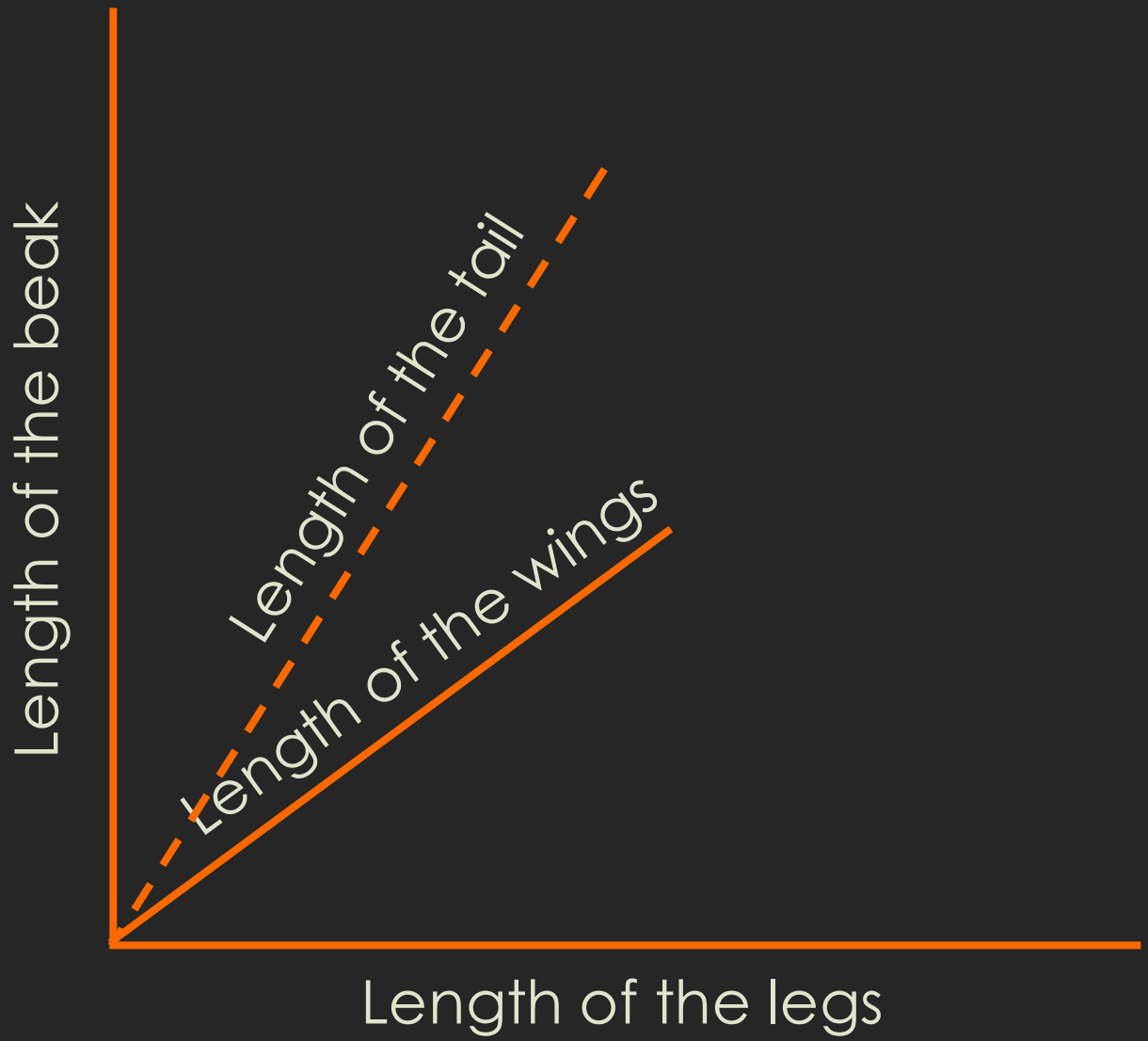

Length of the beak
Length of the legs


Length of the beak
Length of the legs


Length of the beak
Length of the wings
Length of the legs


Length of the beak
Length of the wings
Length of the legs


Length of the beak
Length of the wings
Length of the legs


Length of the beak
Length of the tail
Length of the wings
Length of the legs



0 1 0 0 0 1 0 2 0



0 1 0 0 1 1 1 1 0



1 0 1 1 1 0 1 1 0



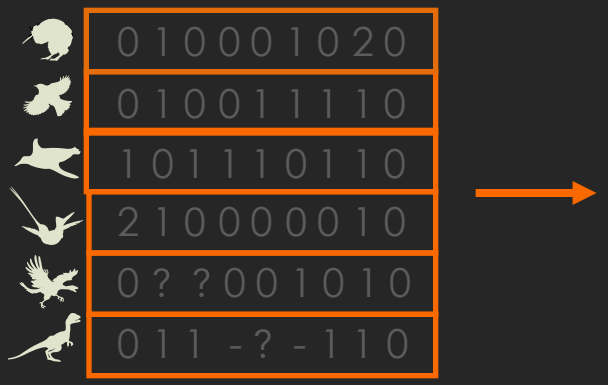
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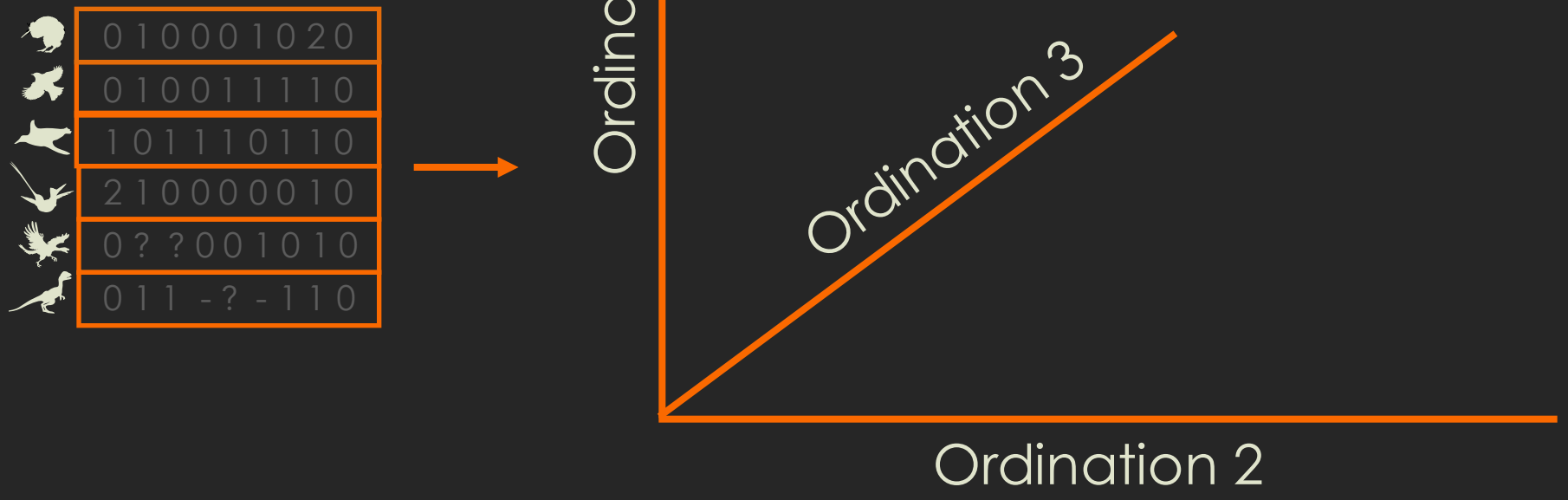


0 ? ? 0 0 1 0 1 0



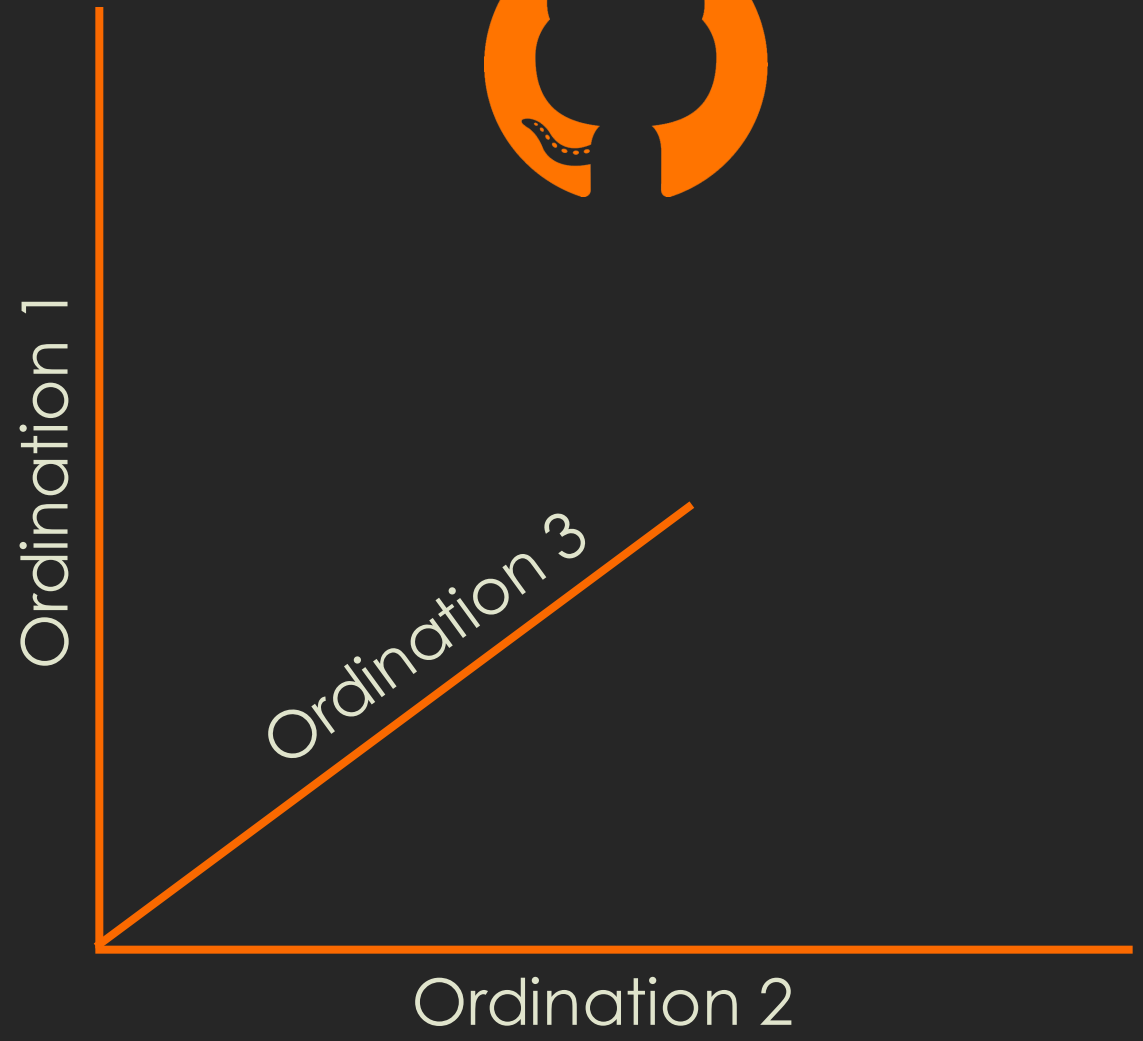
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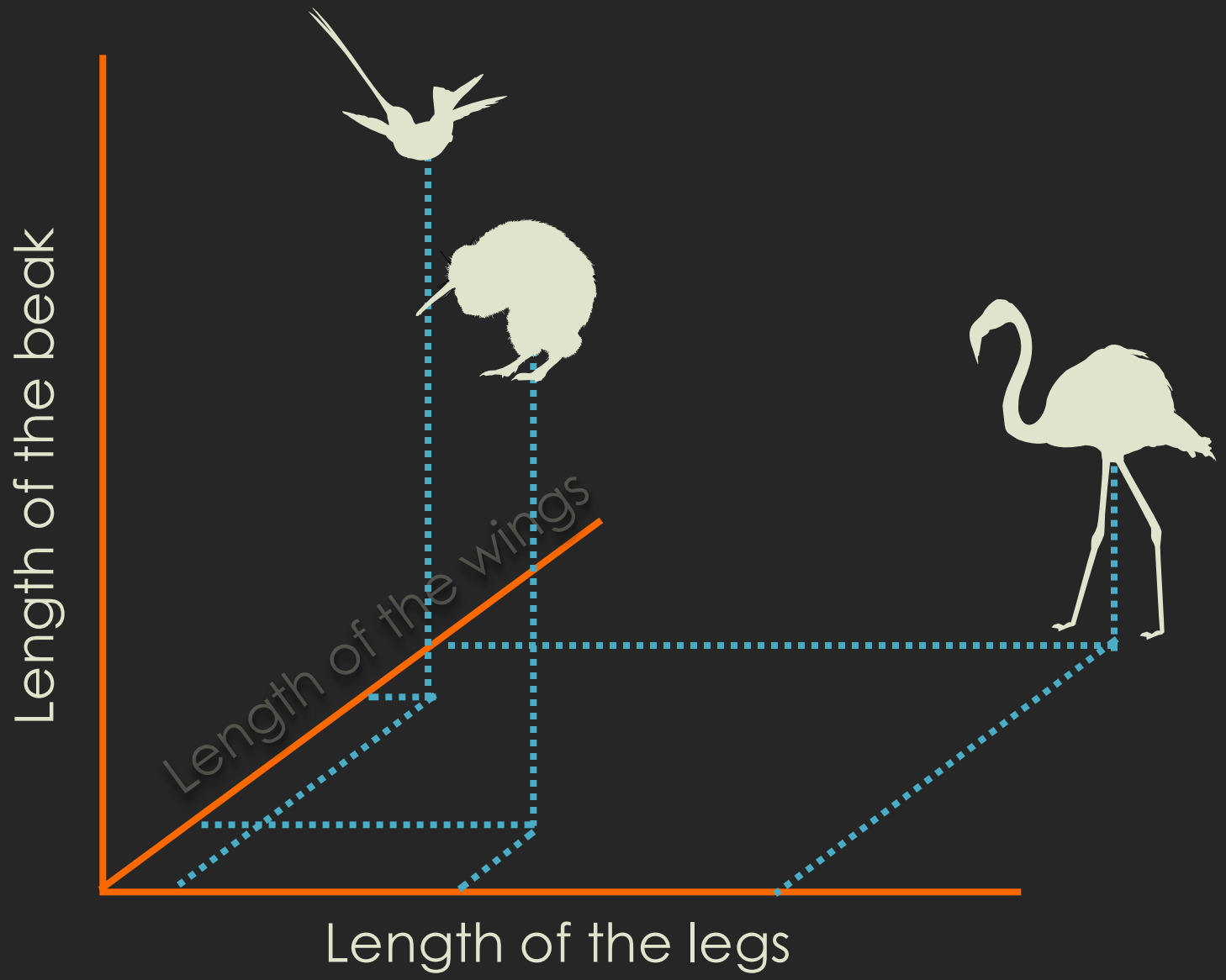

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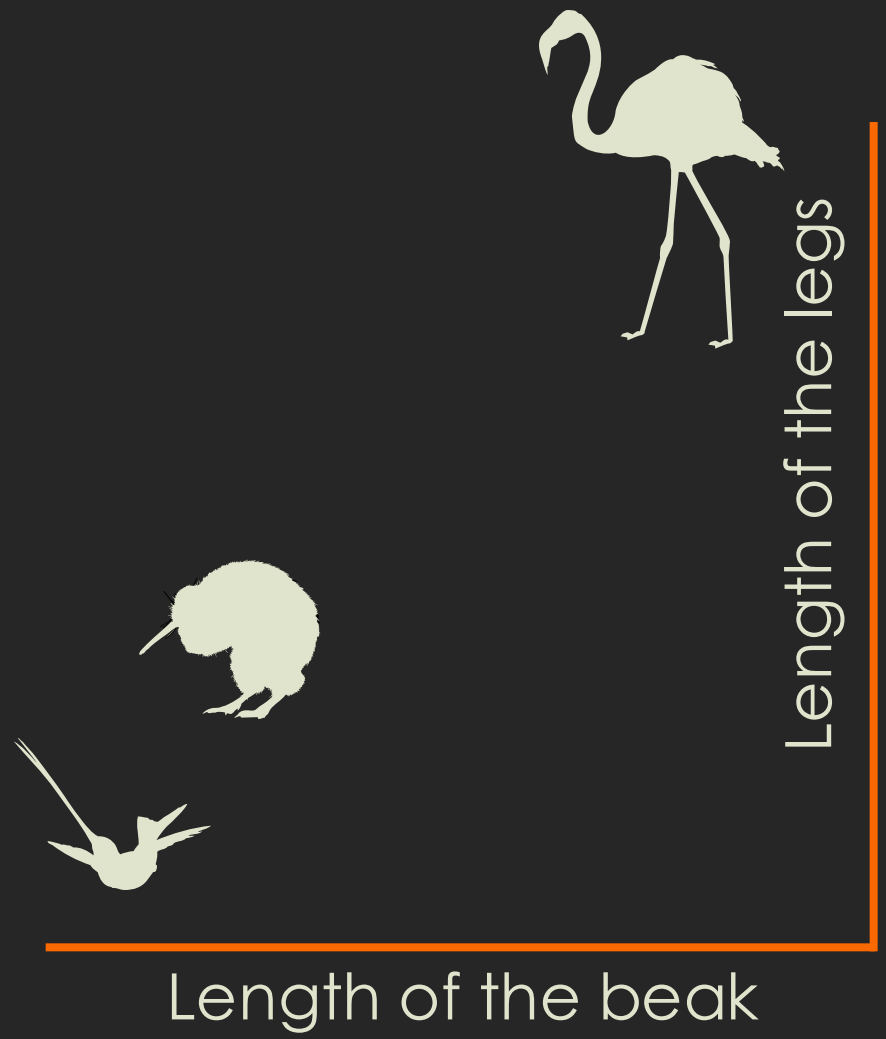

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2 1 0 0 0 0 0 1 0
0 ? ? 0 0 1 0 1 0
0 1 1 - ? - 1 1 0
Ordination 1
Ordination 3
Ordination 2

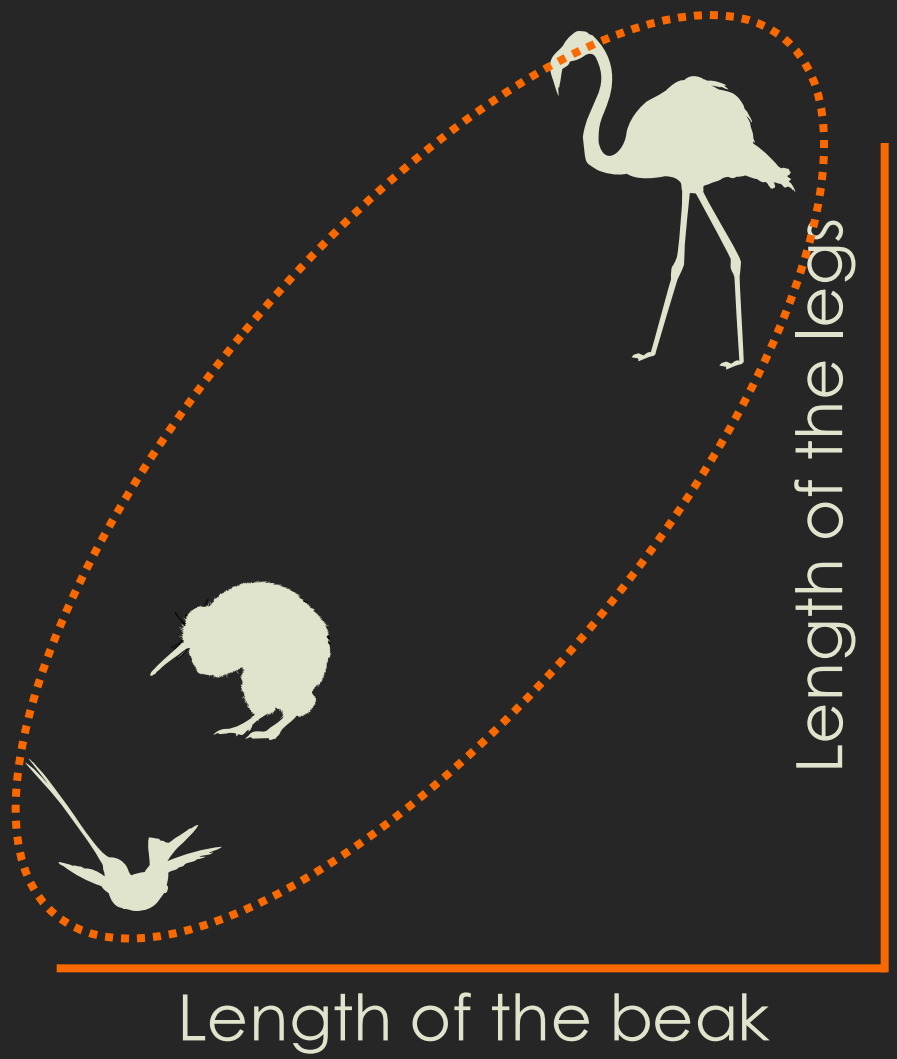
github.com/graemetlloyd/Claddis



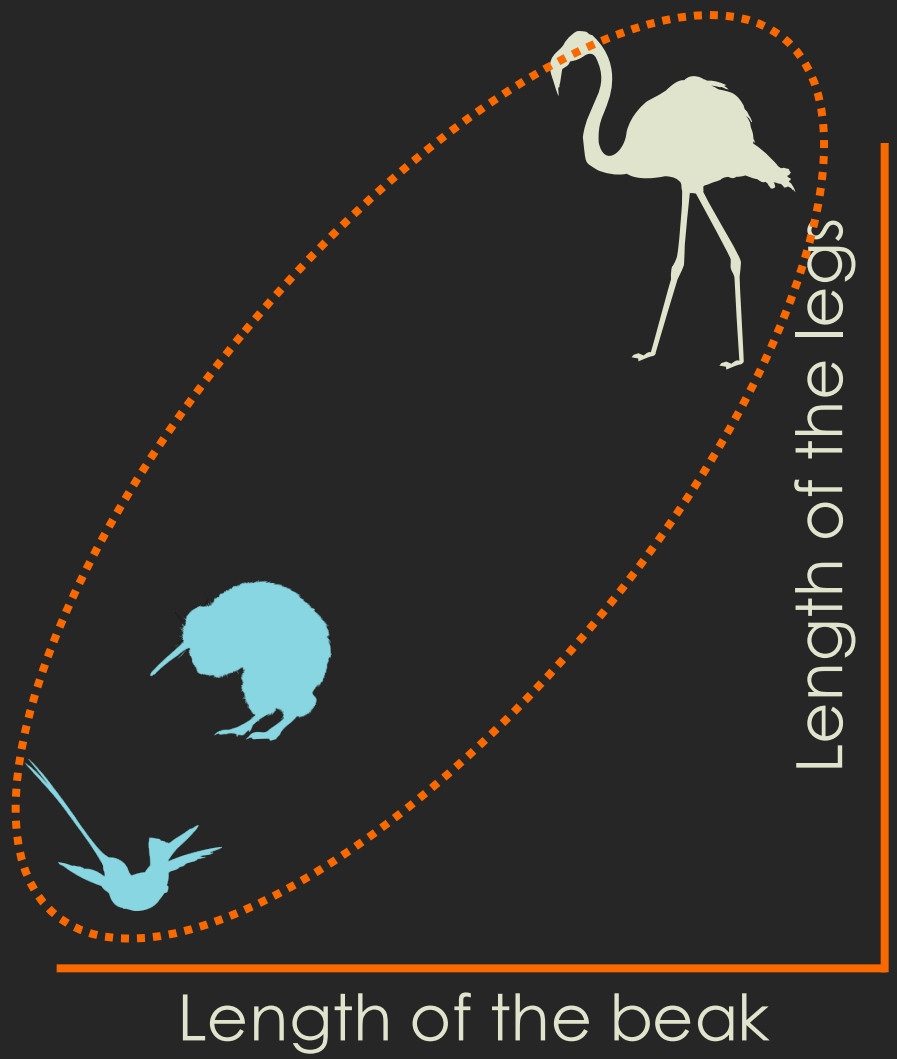



Length of the beak
Length of the wings
Length of the legs

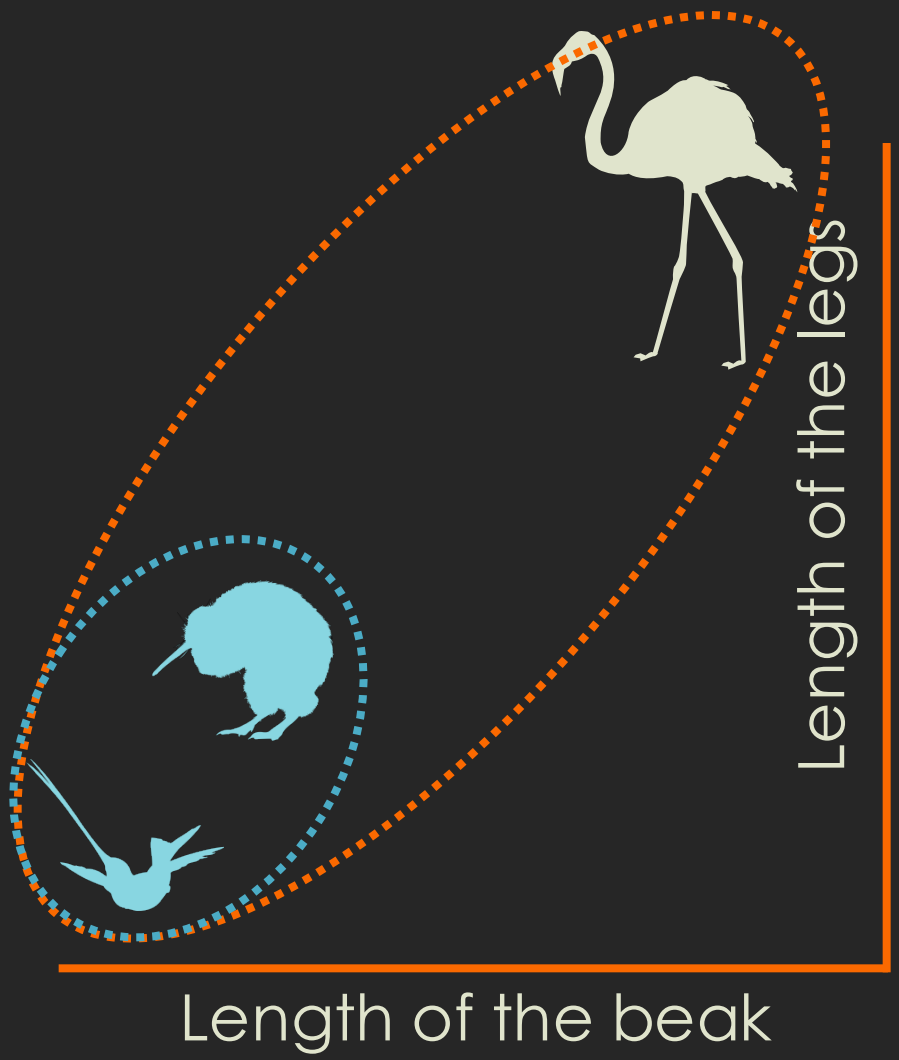

Length of the legs
Length of the beak



Disparity()



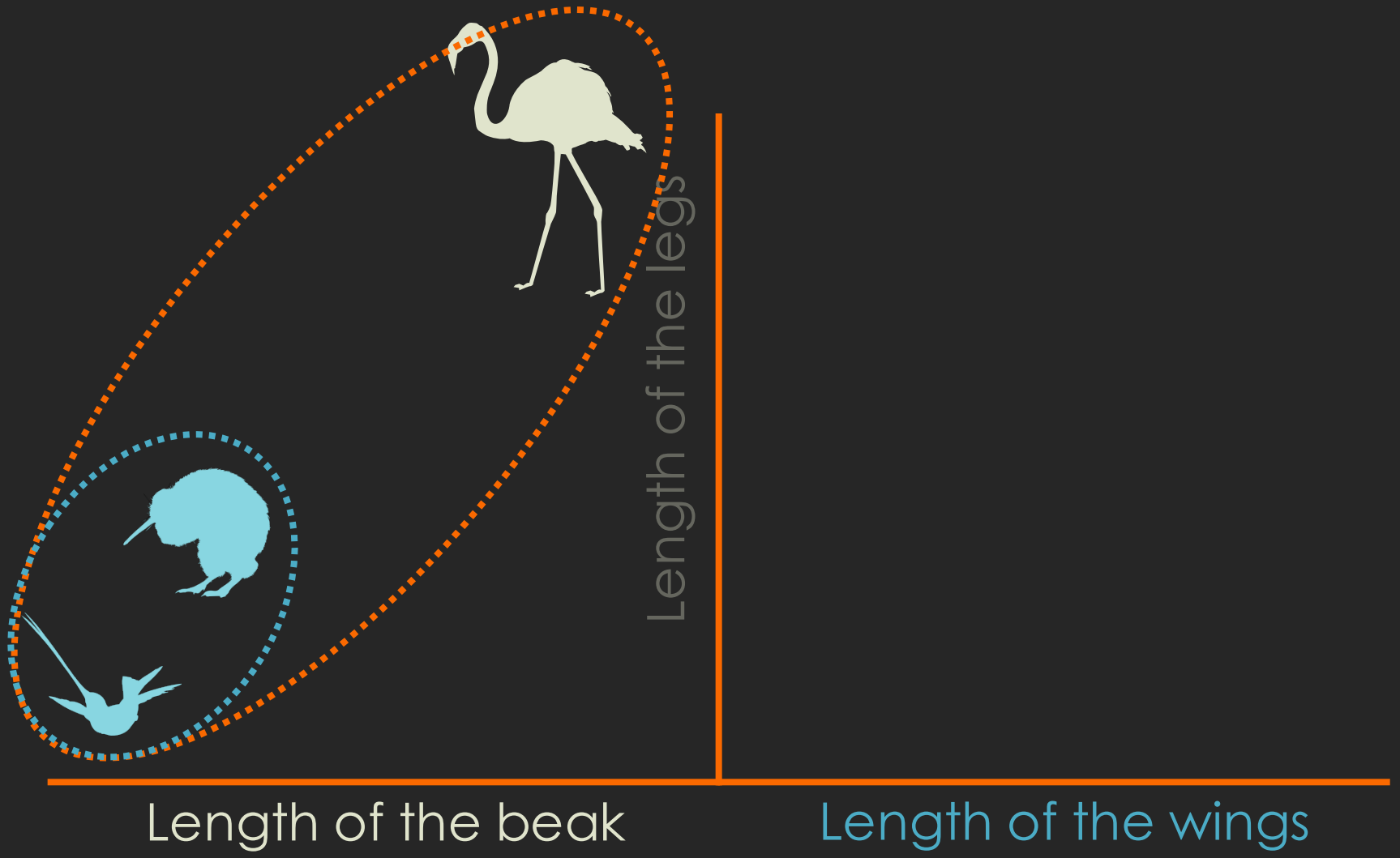
Disparity()

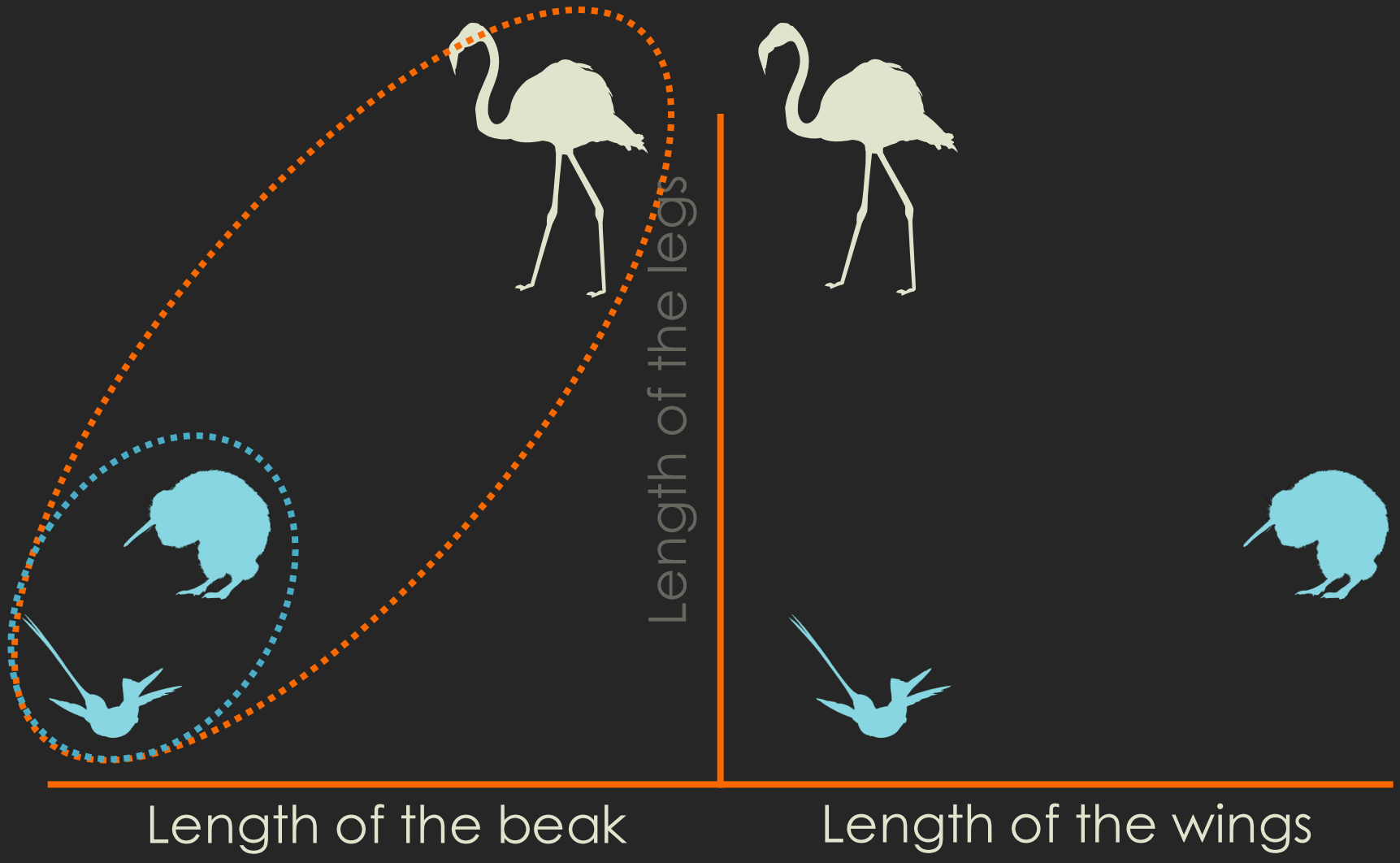


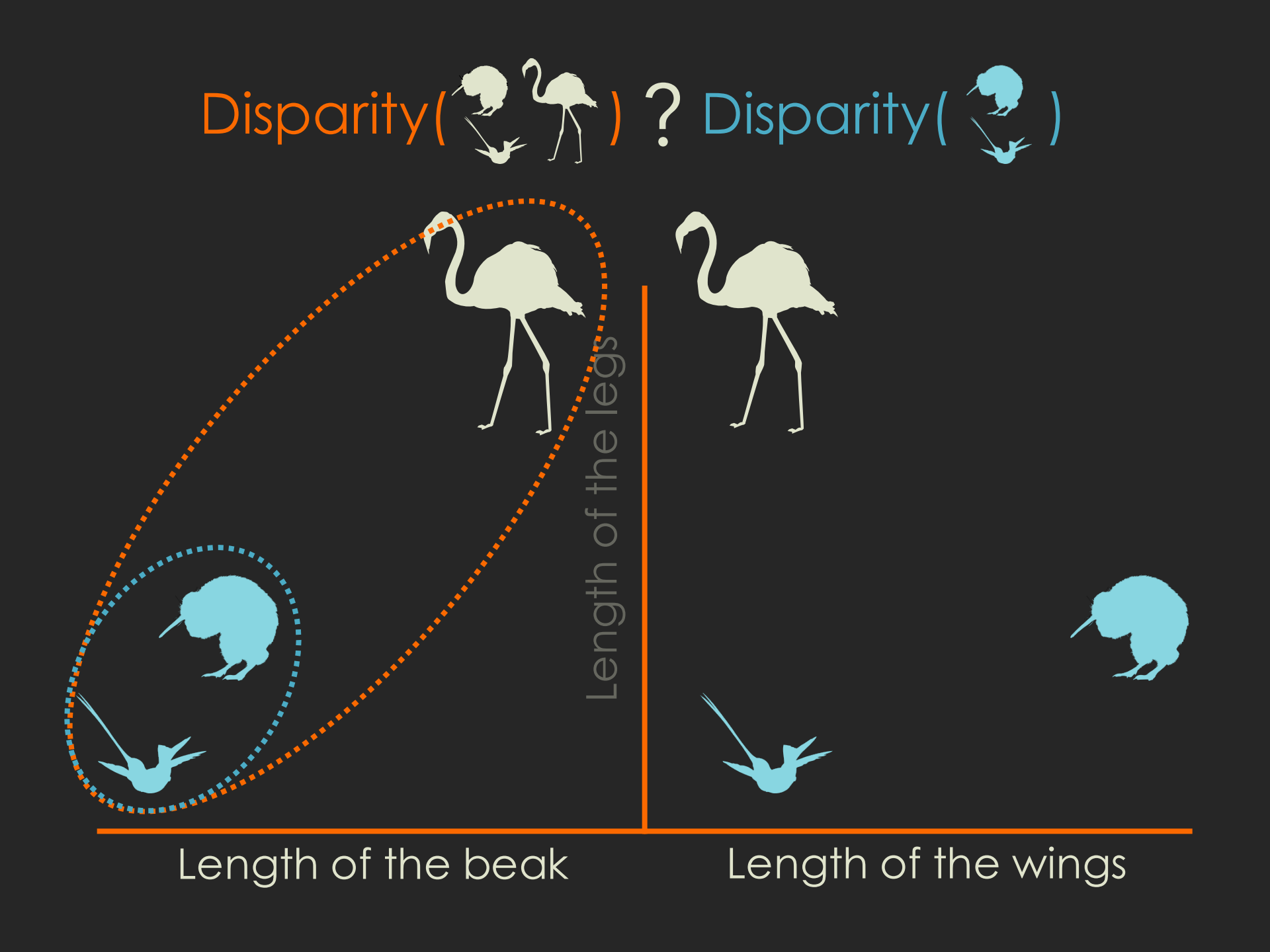
Disparity()

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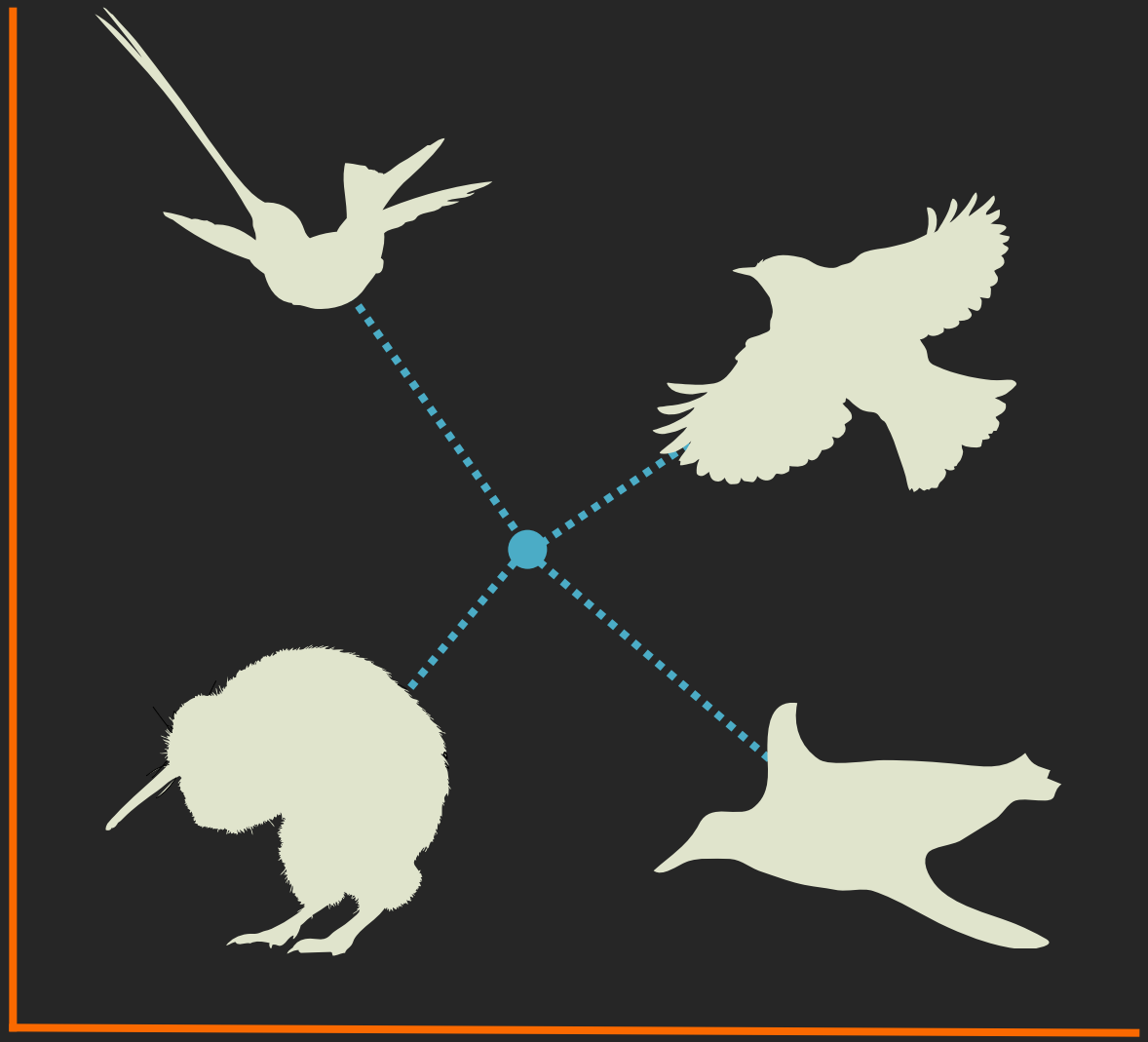
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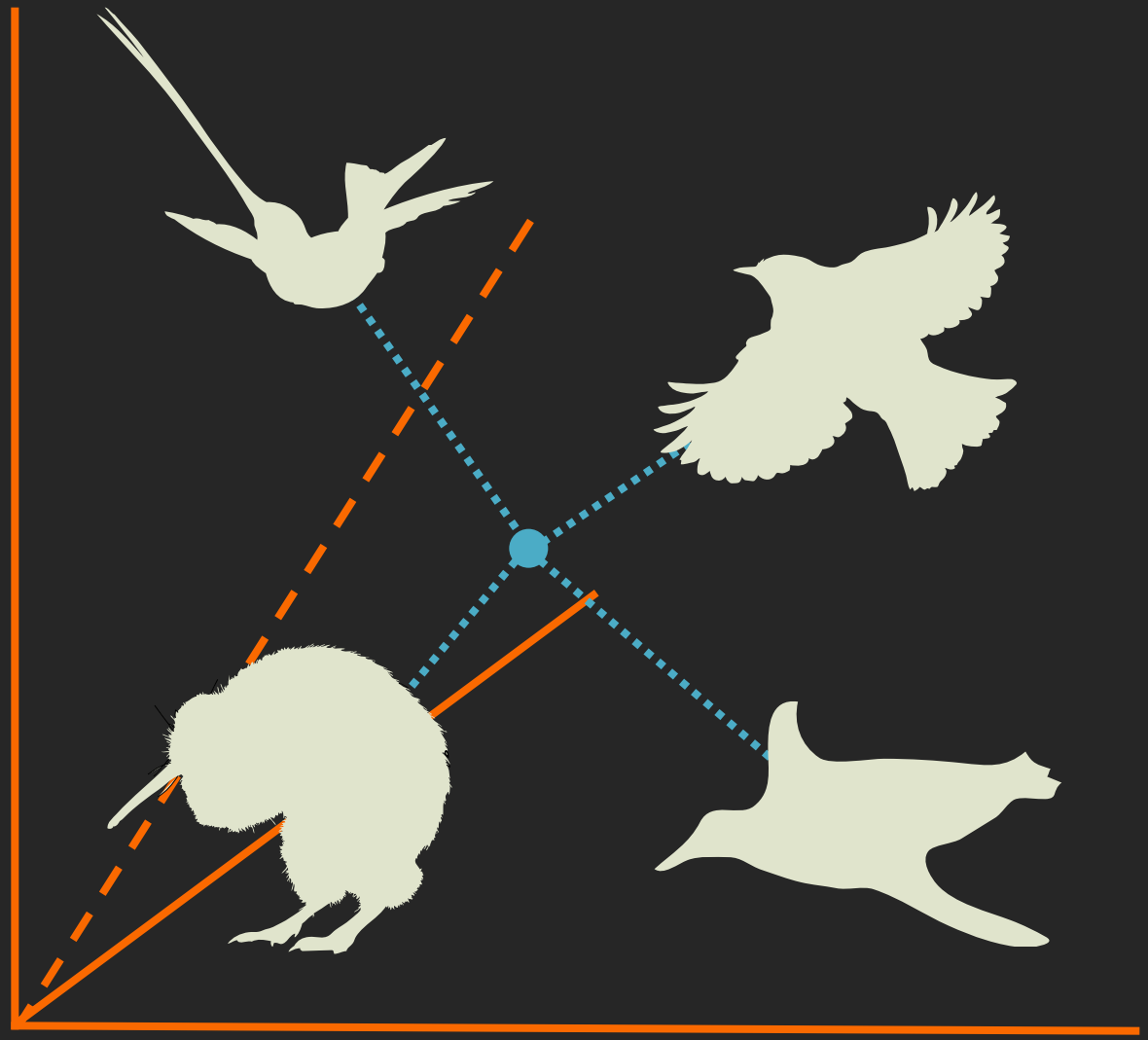

Length of the legs
Length of the beak
Length of the wings

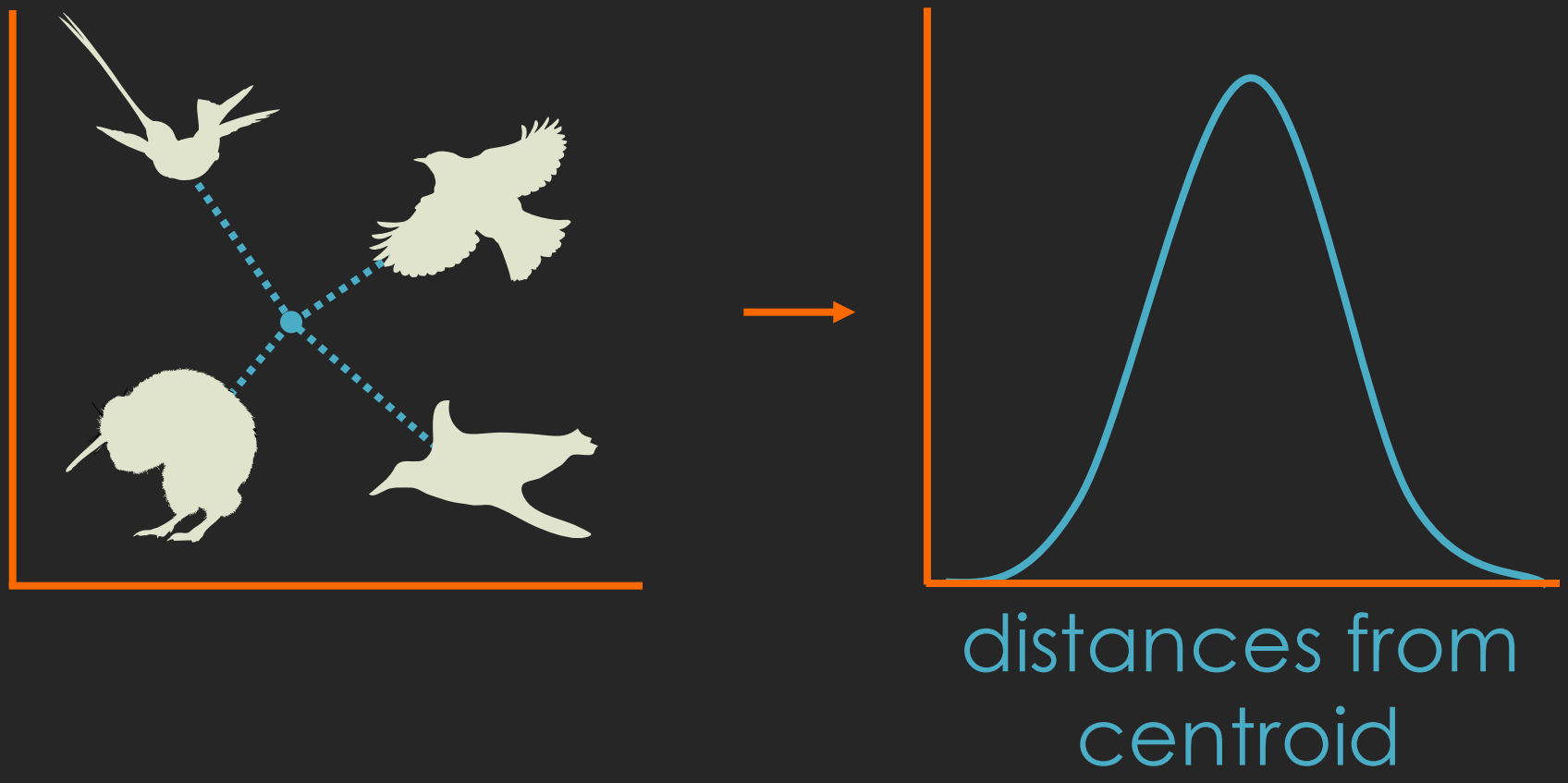

Length of the legs
Length of the beak
Length of the wings


Disparity( ) ? Disparity( )
Length of the legs
Length of the beak
Length of the wings

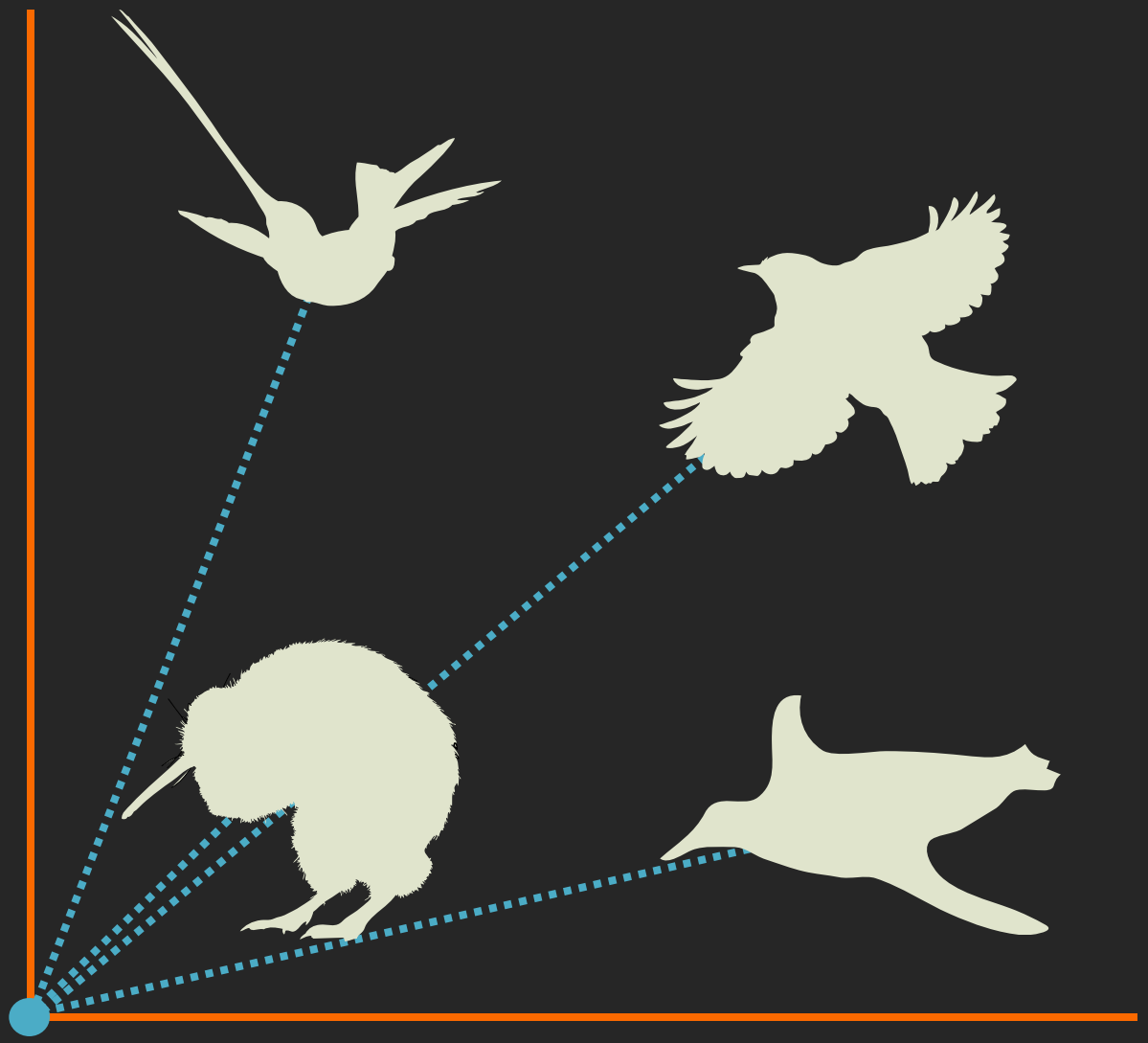


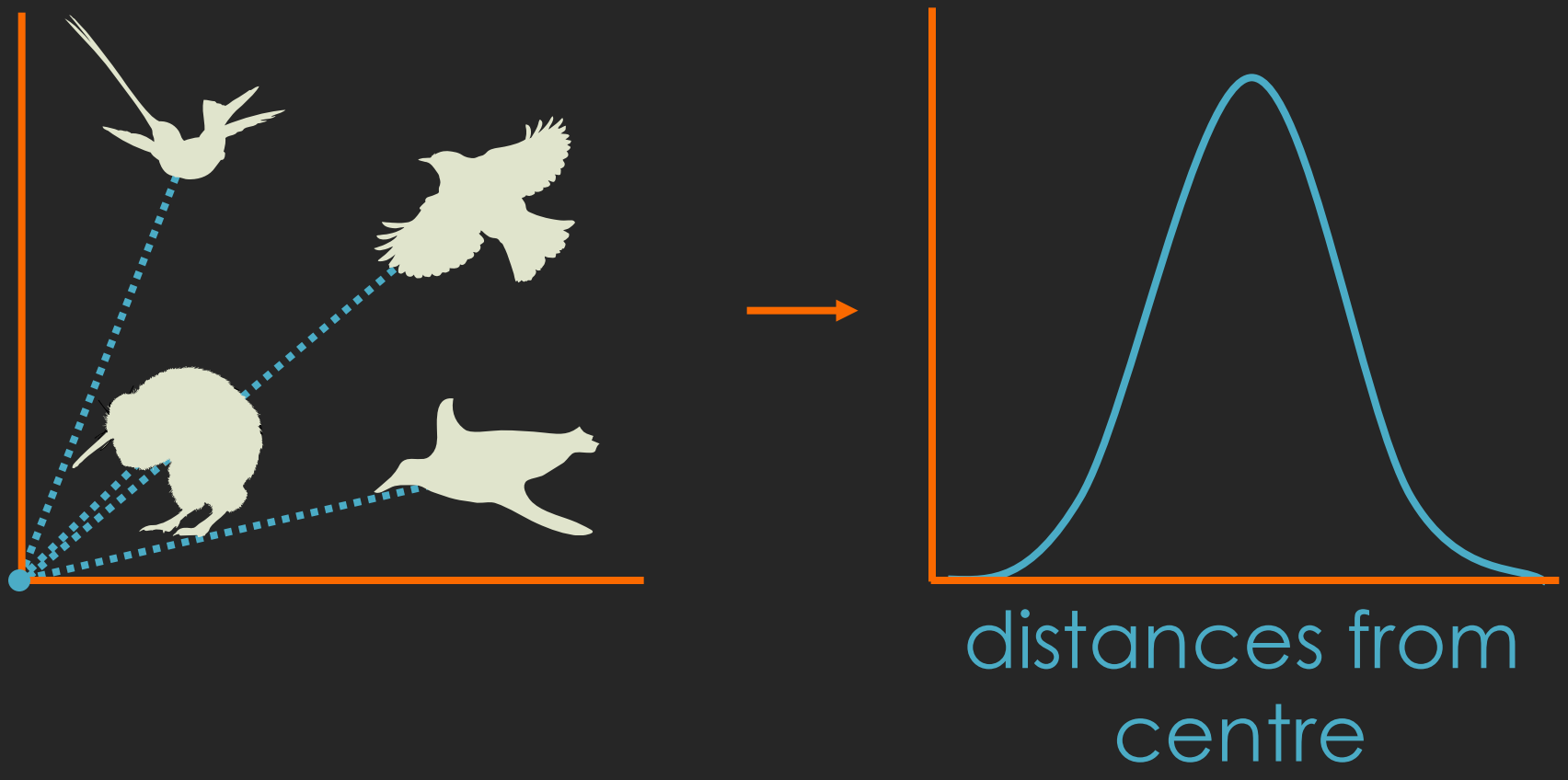






disparity = ”size” of the group

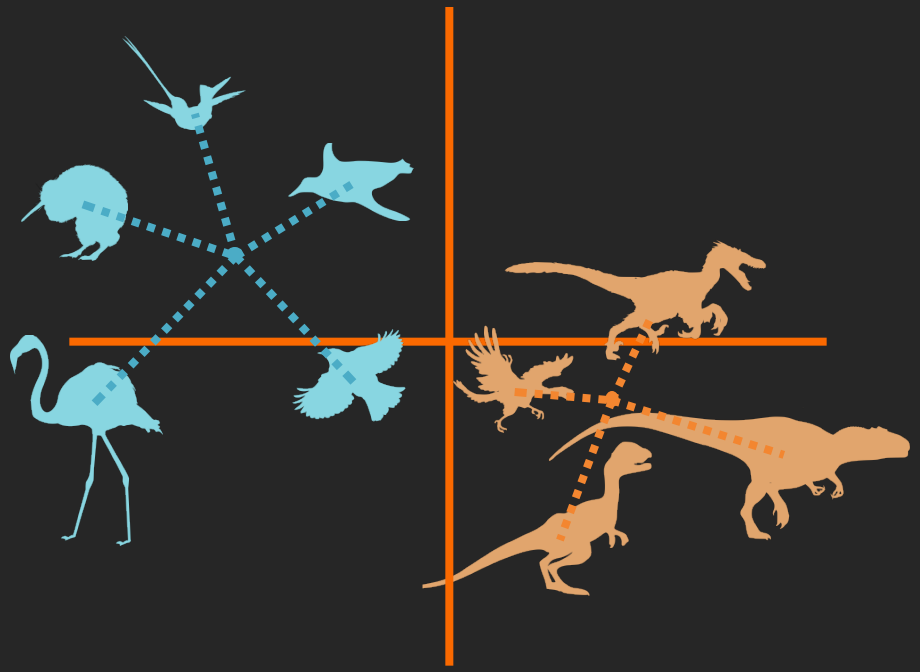


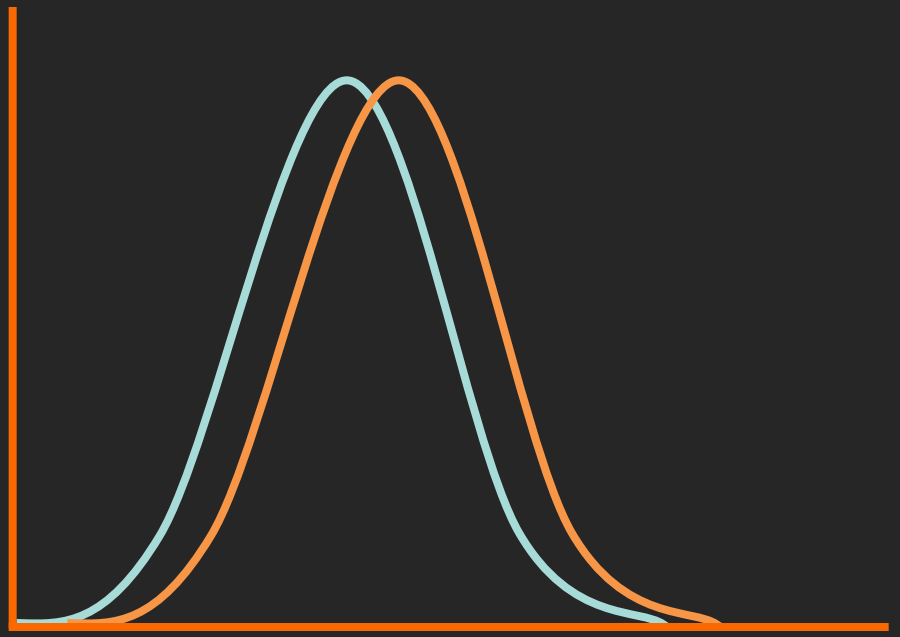


disparity = ”position” of the group

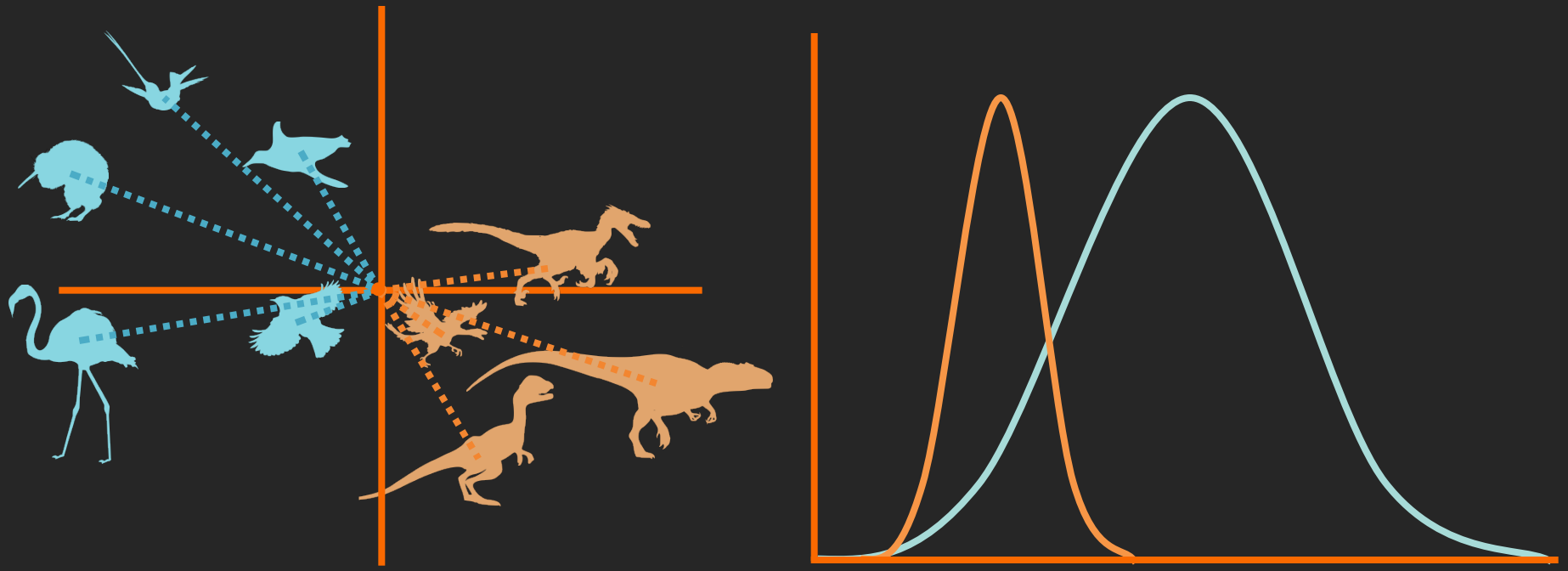


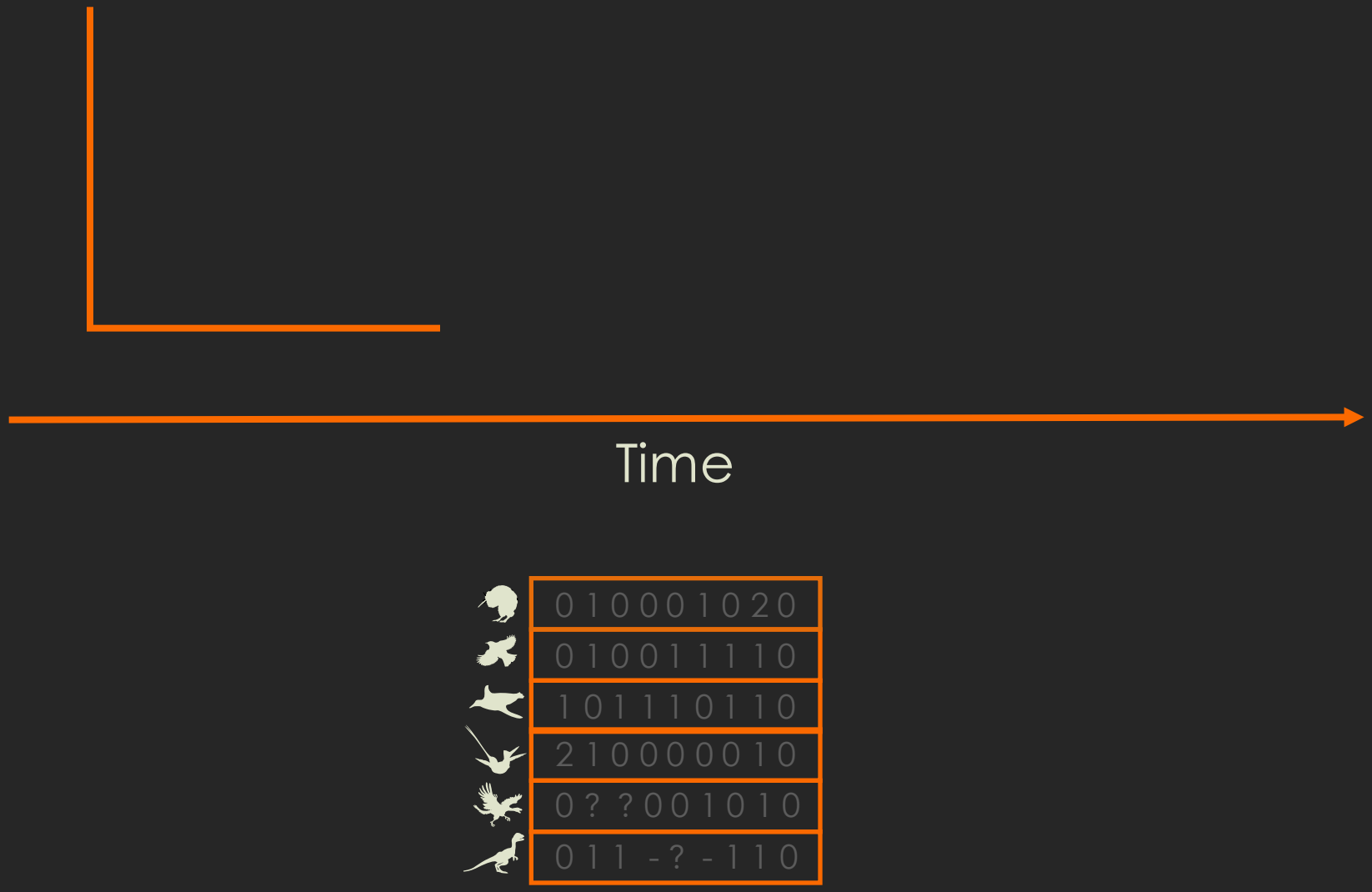


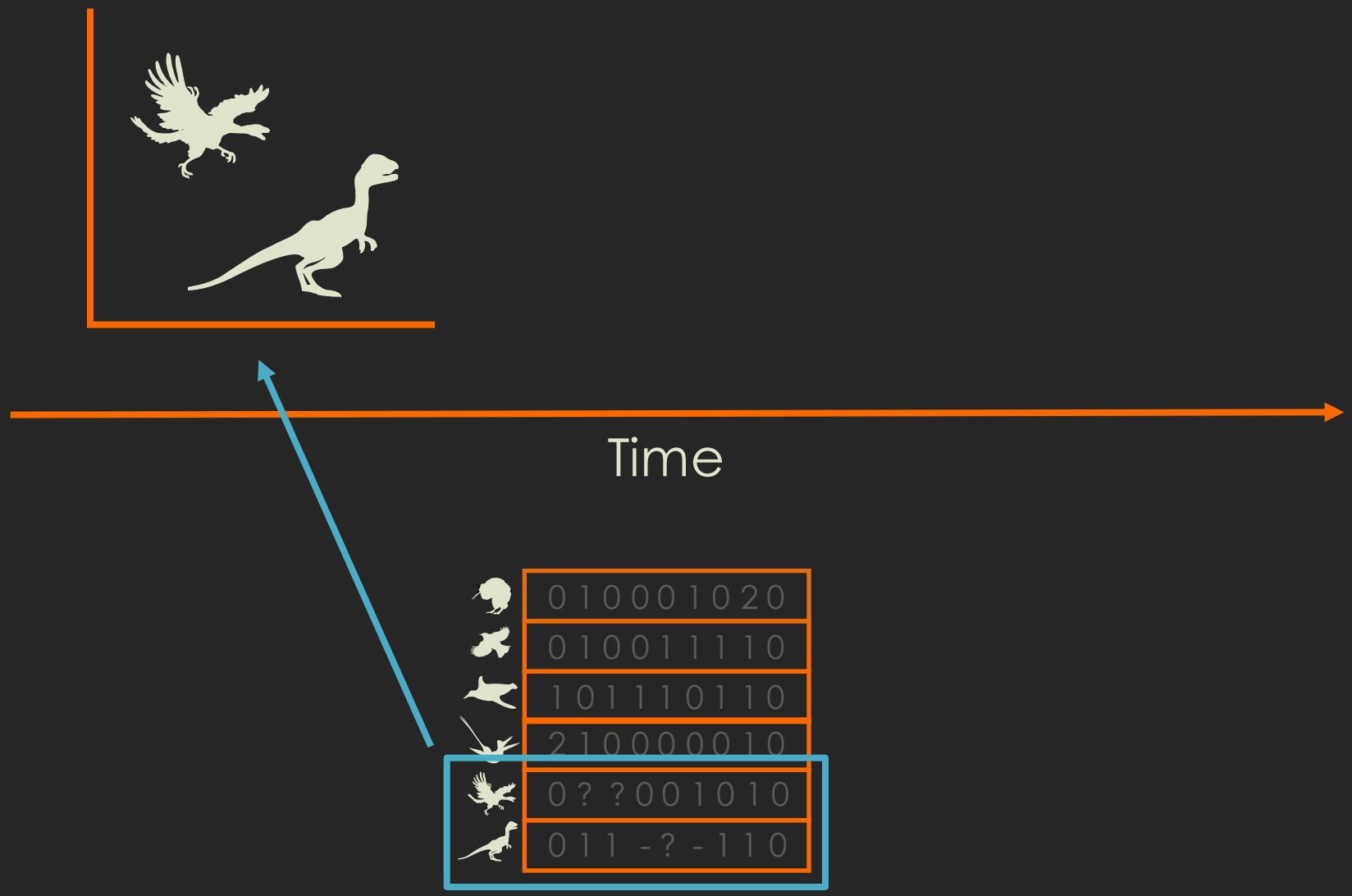


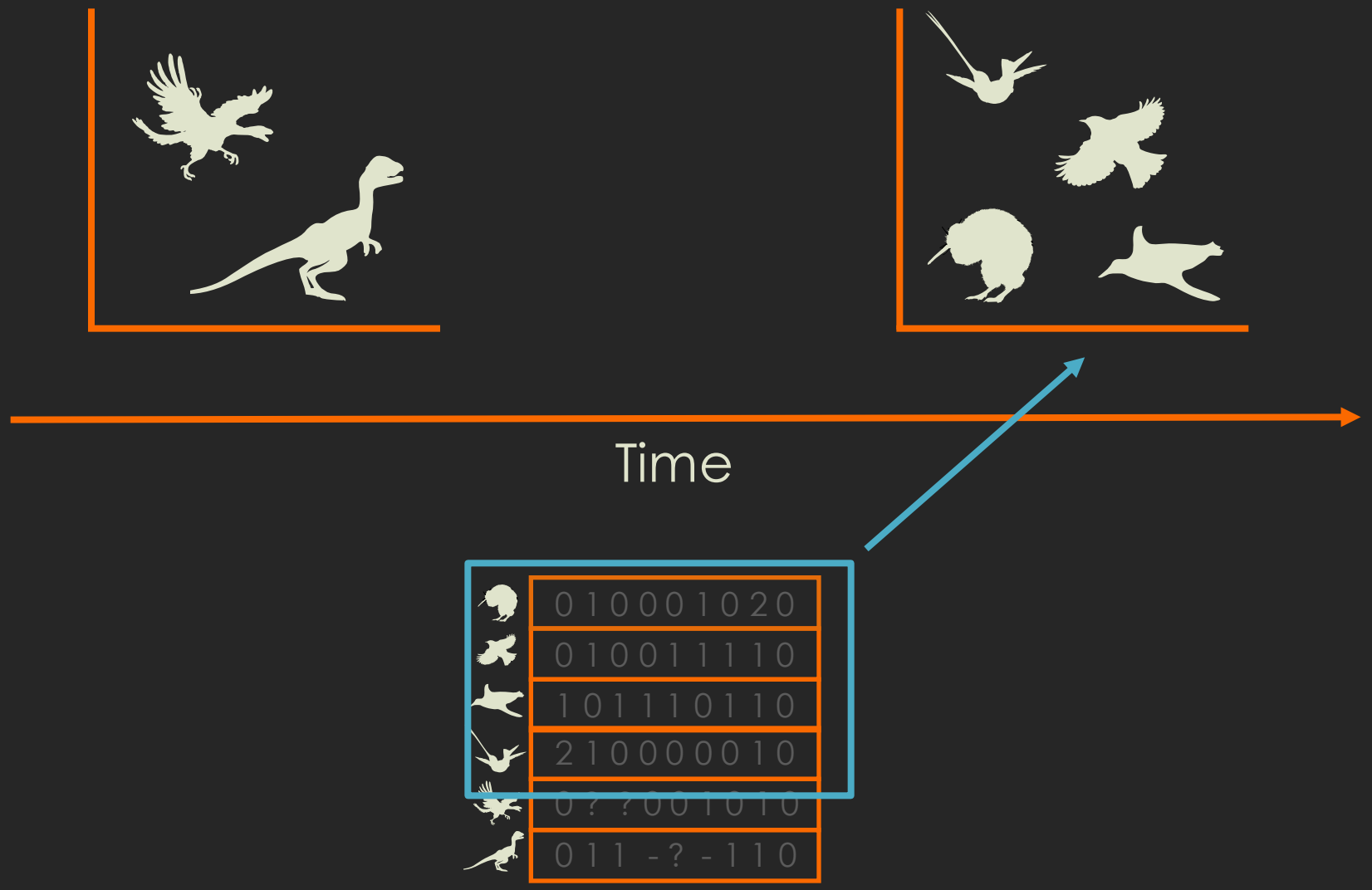


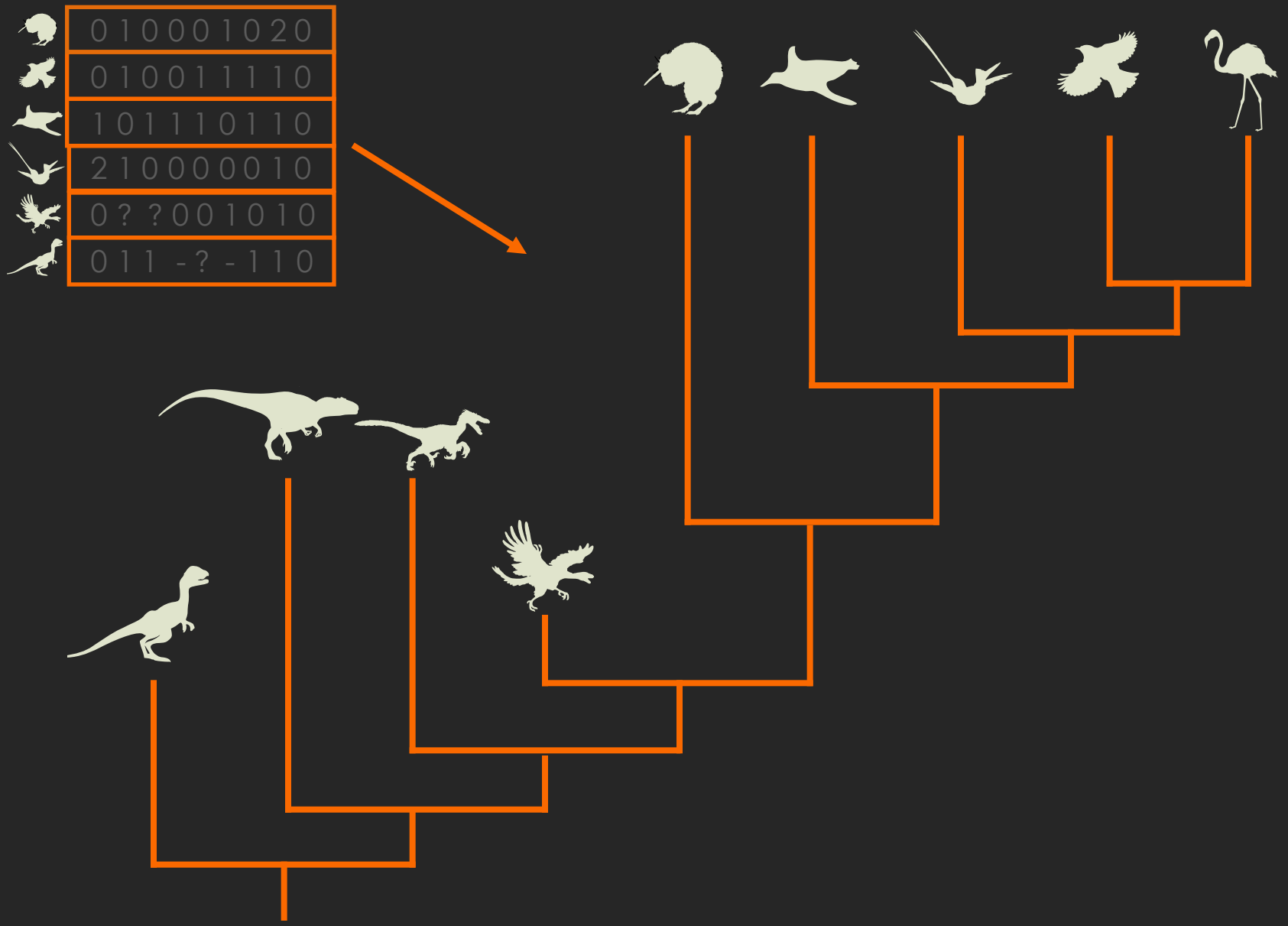
distances from centroid

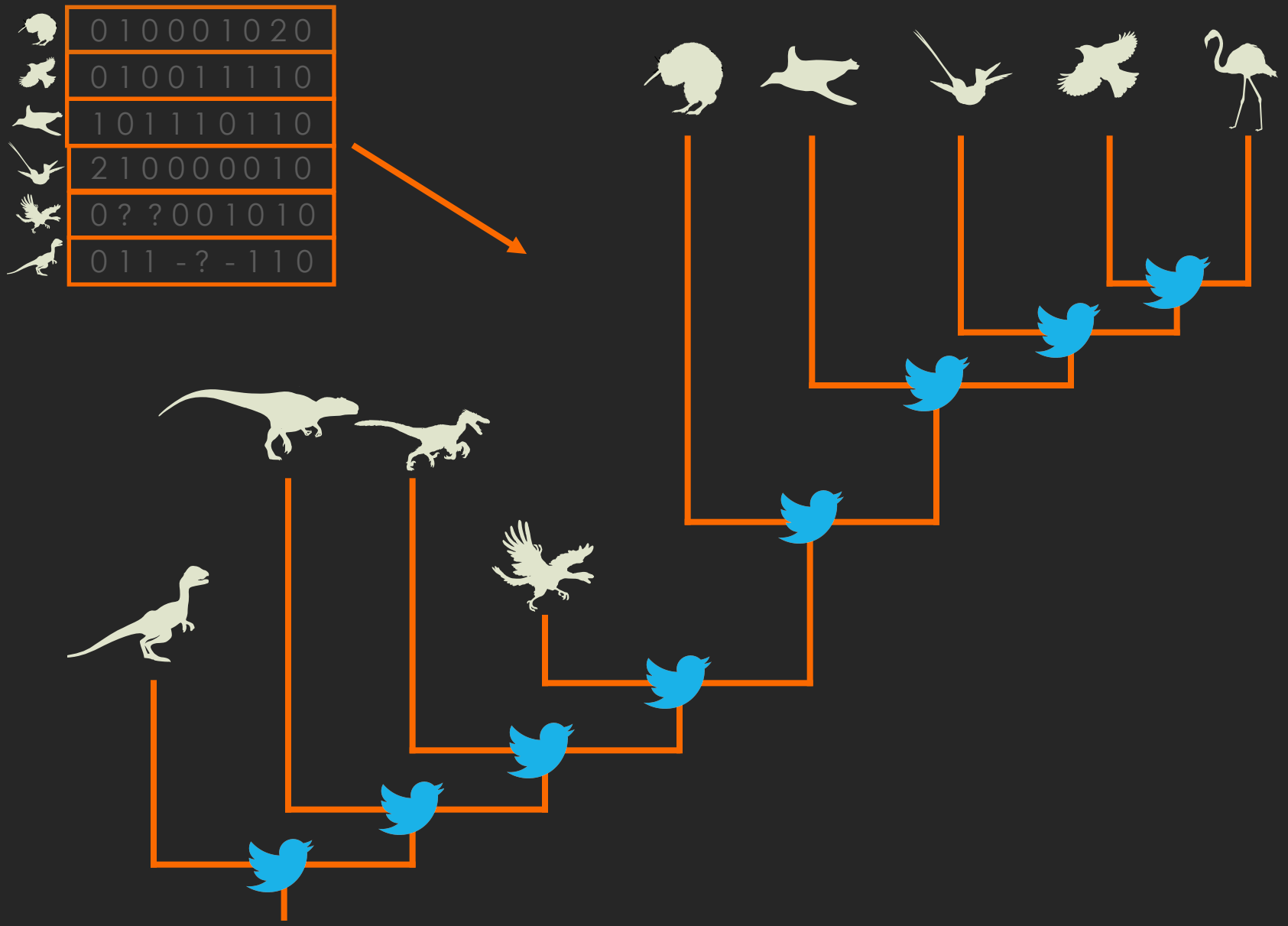

distances from centre

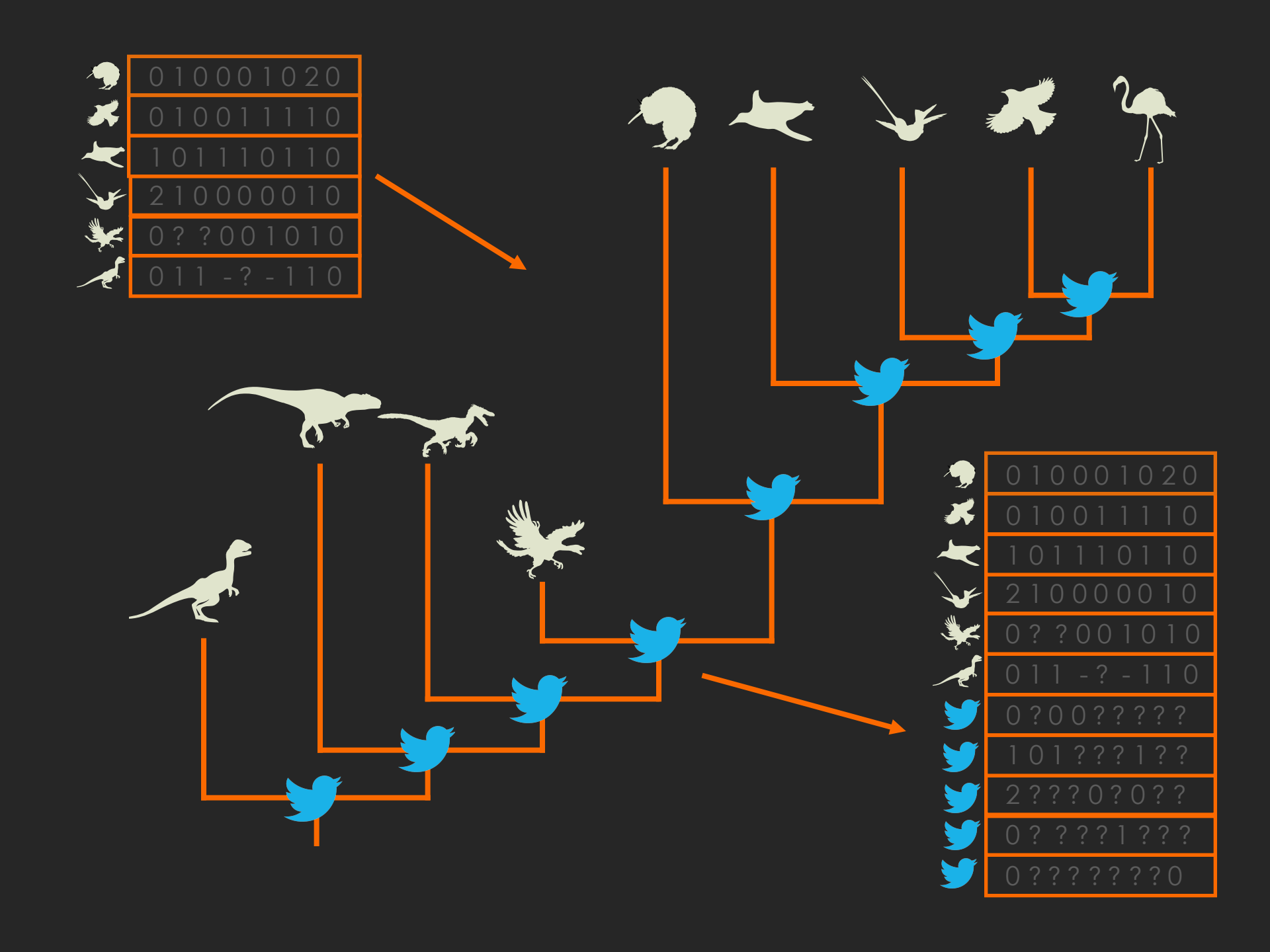

Time
0 1 0 0 0 1 0 2 0
0 1 0 0 1 1 1 1 0
1 0 1 1 1 0 1 1 0
2 1 0 0 0 0 0 1 0
0 ? ? 0 0 1 0 1 0
0 1 1 - ? - 1 1 0

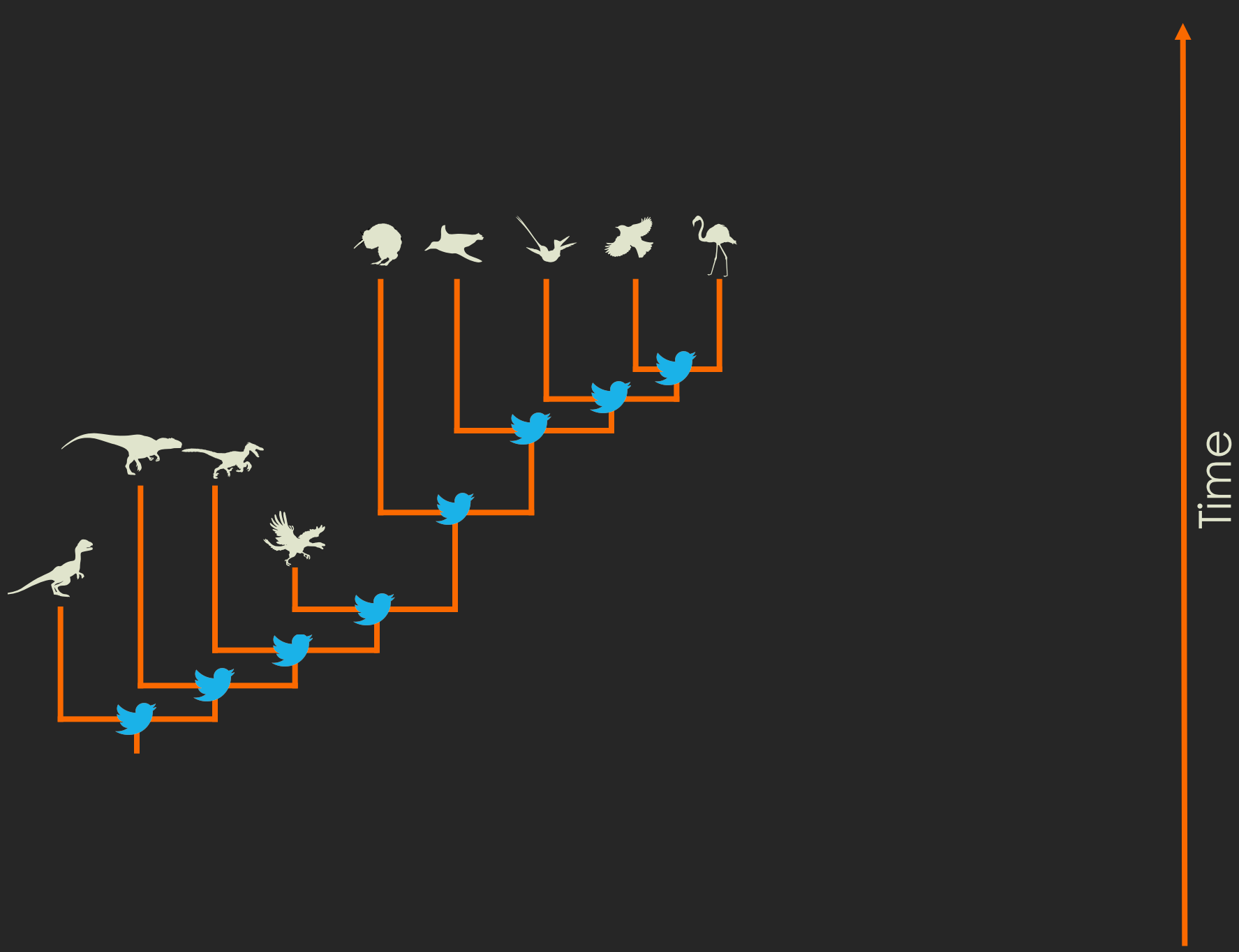

Time
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1 0 1 1 1 0 1 1 0
2 1 0 0 0 0 0 1 0
0 ? ? 0 0 1 0 1 0
0 1 1 - ? - 1 1 0

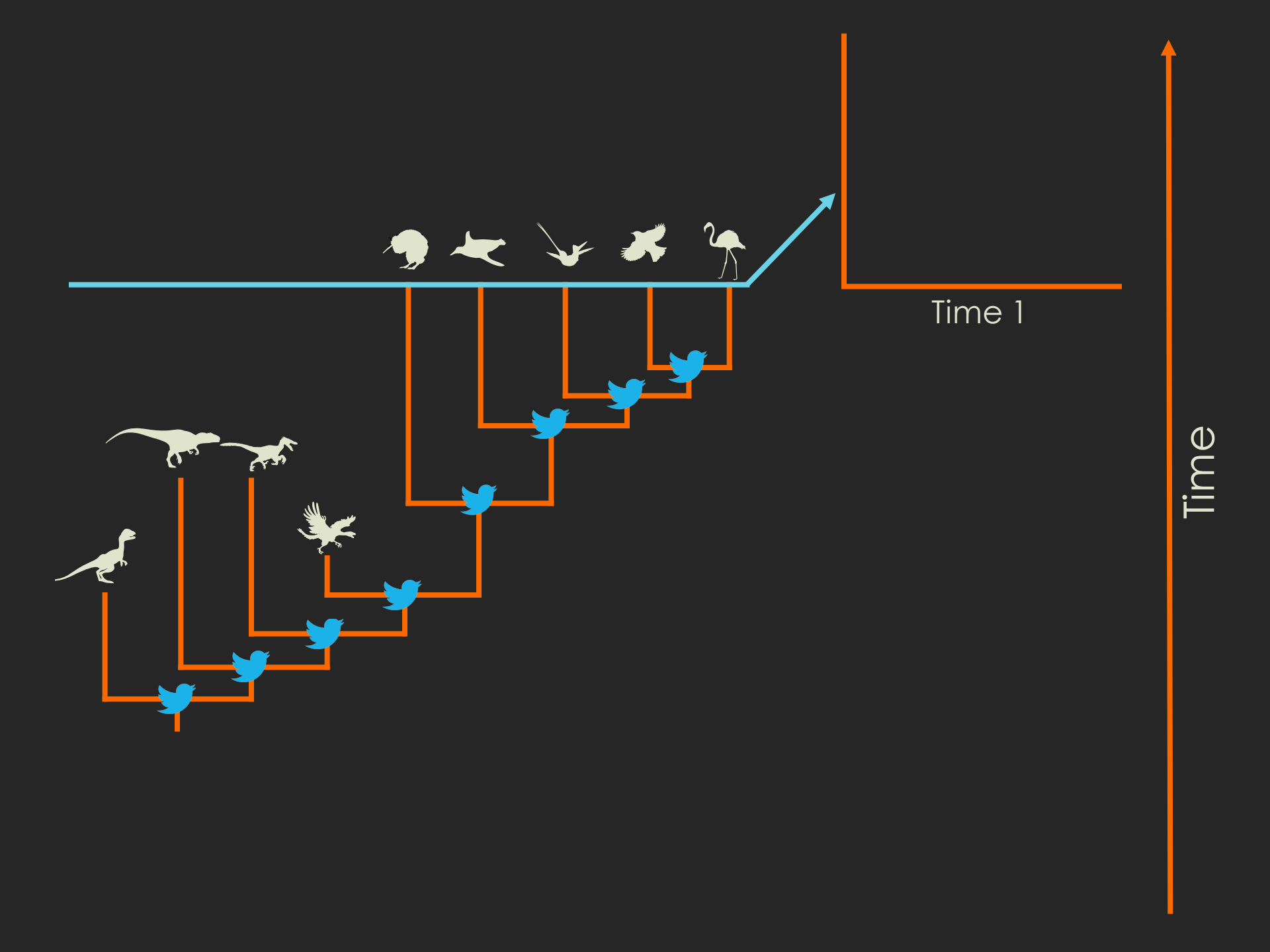

Time
0 1 0 0 0 1 0 2 0
0 1 0 0 1 1 1 1 0
1 0 1 1 1 0 1 1 0
2 1 0 0 0 0 0 1 0
0 ? ? 0 0 1 0 1 0
0 1 1 - ? - 1 1 0

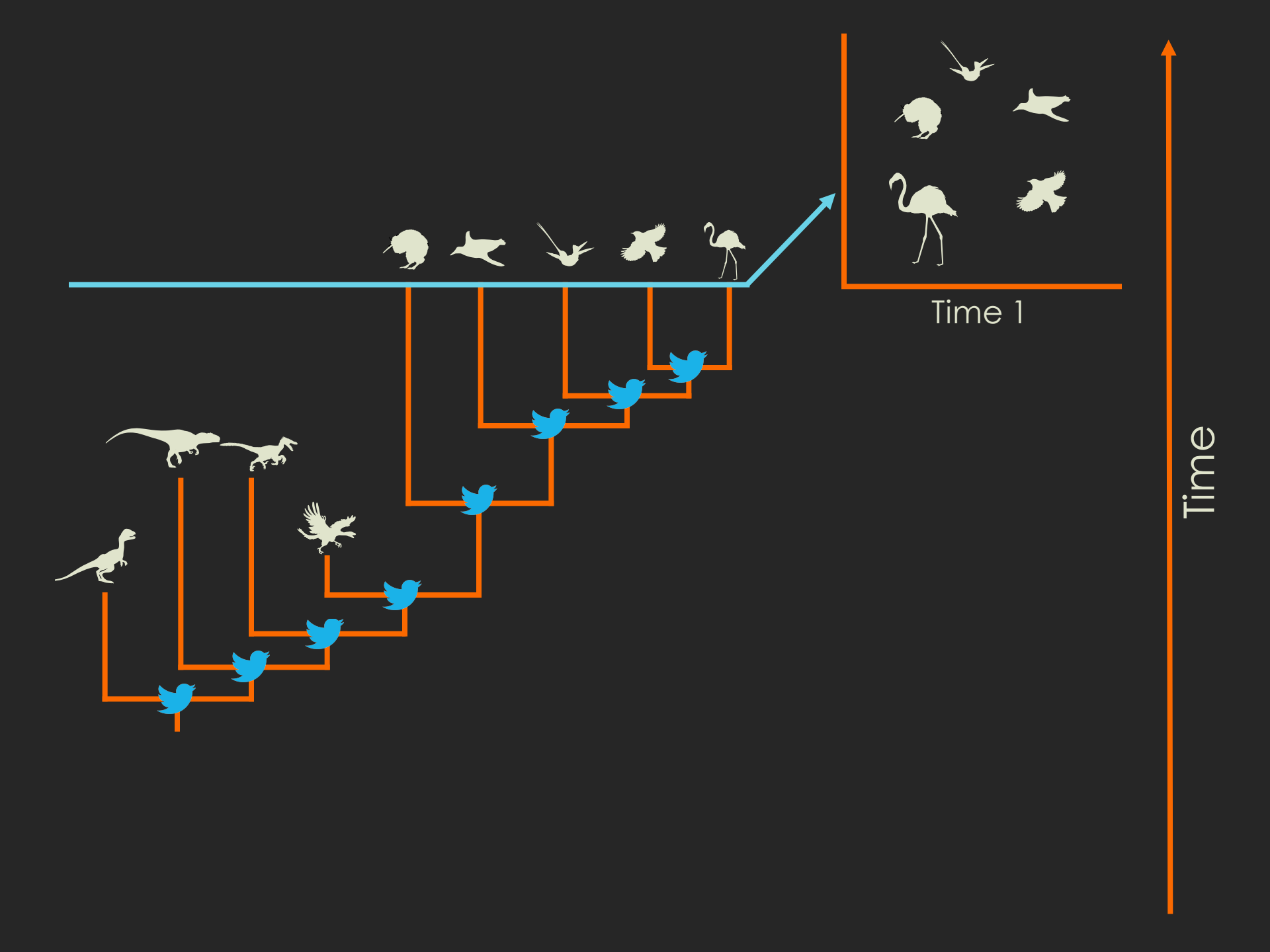

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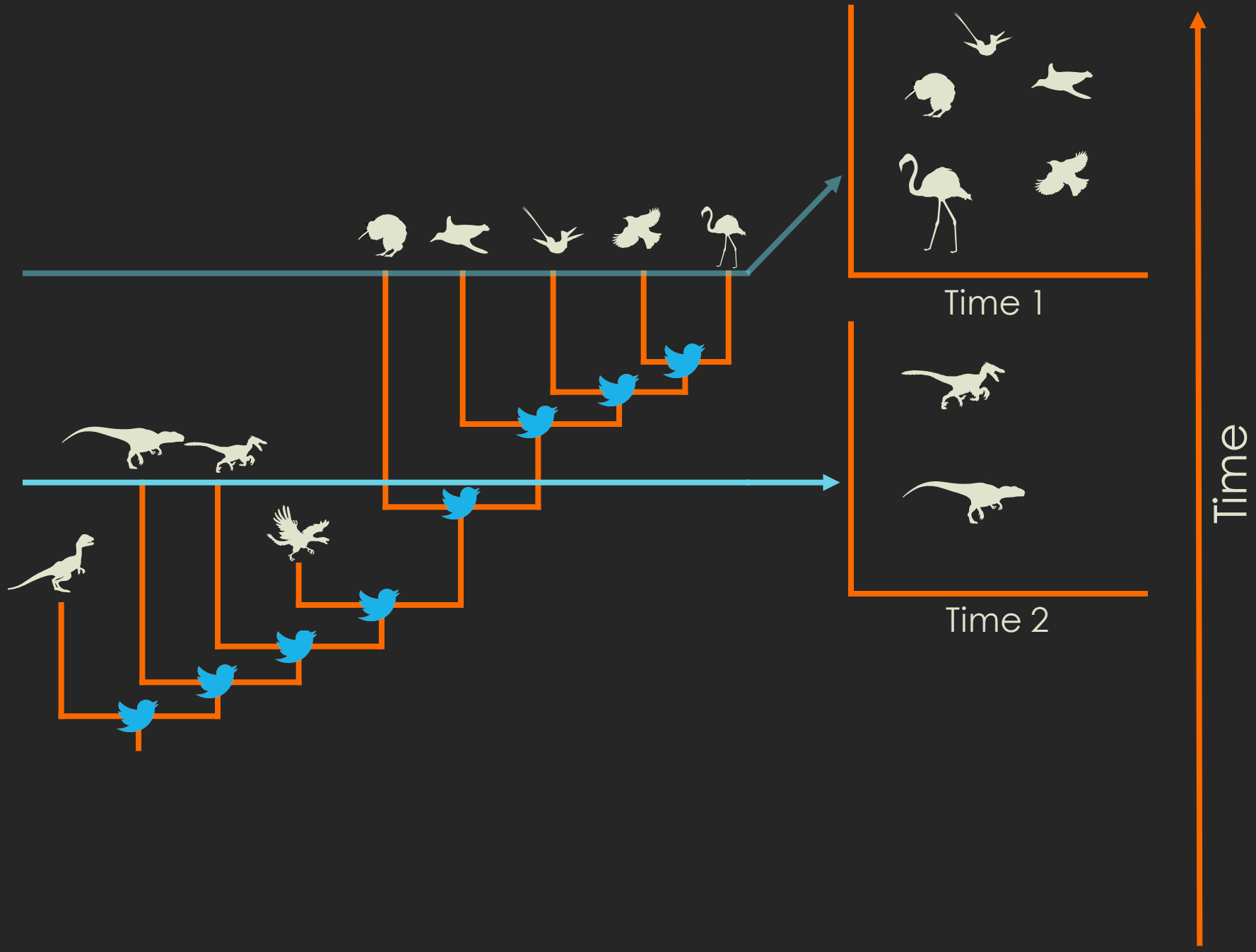

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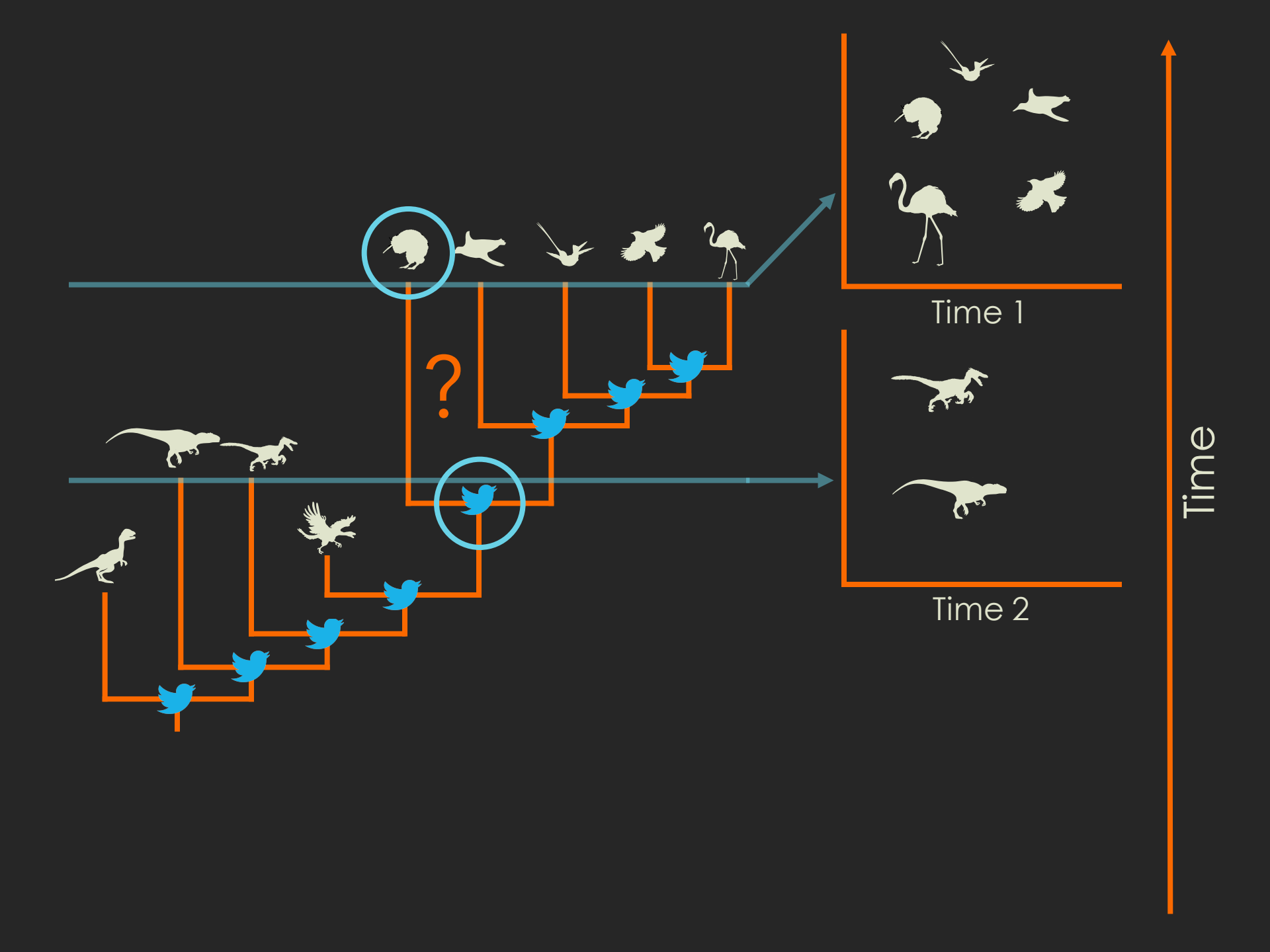

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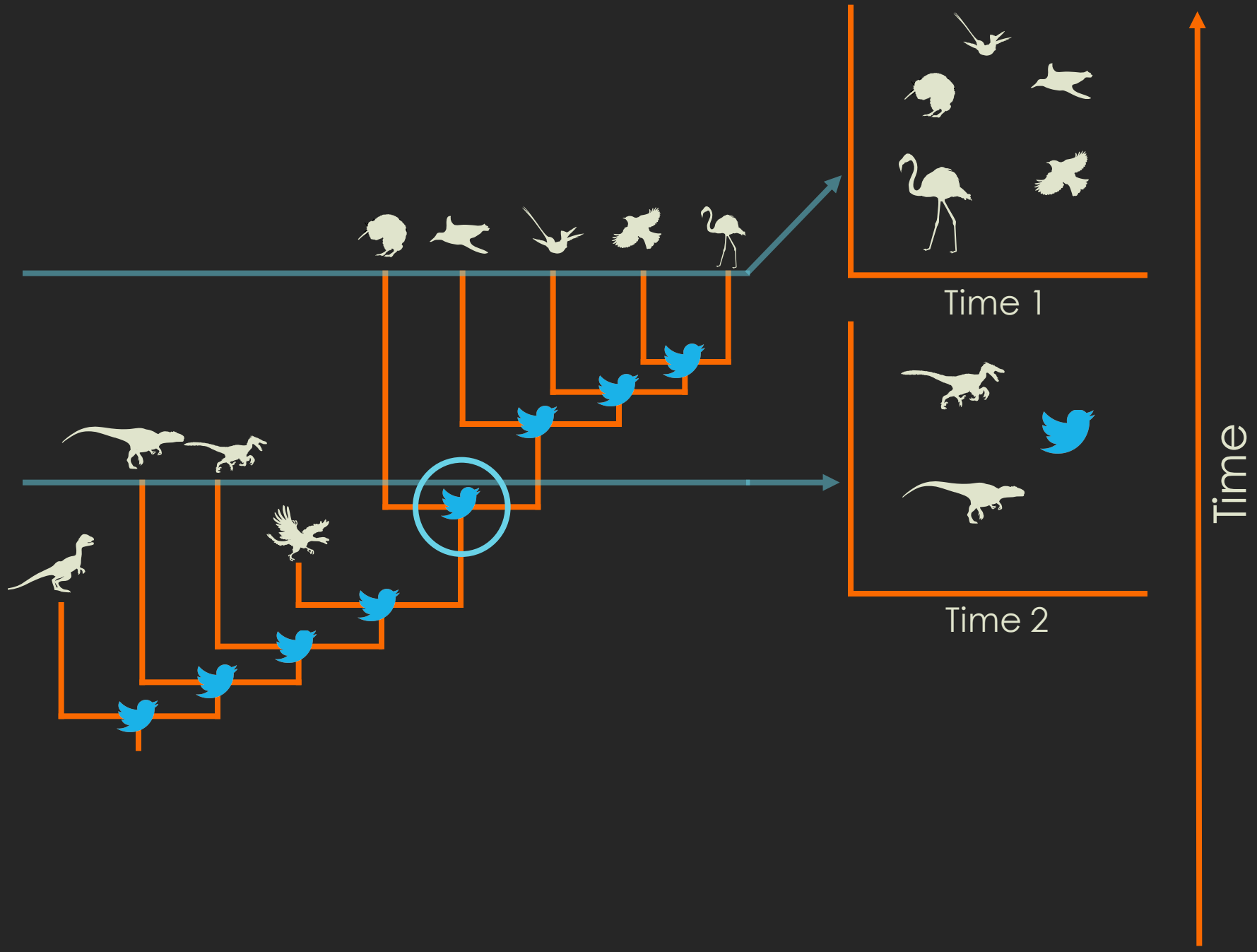

Time

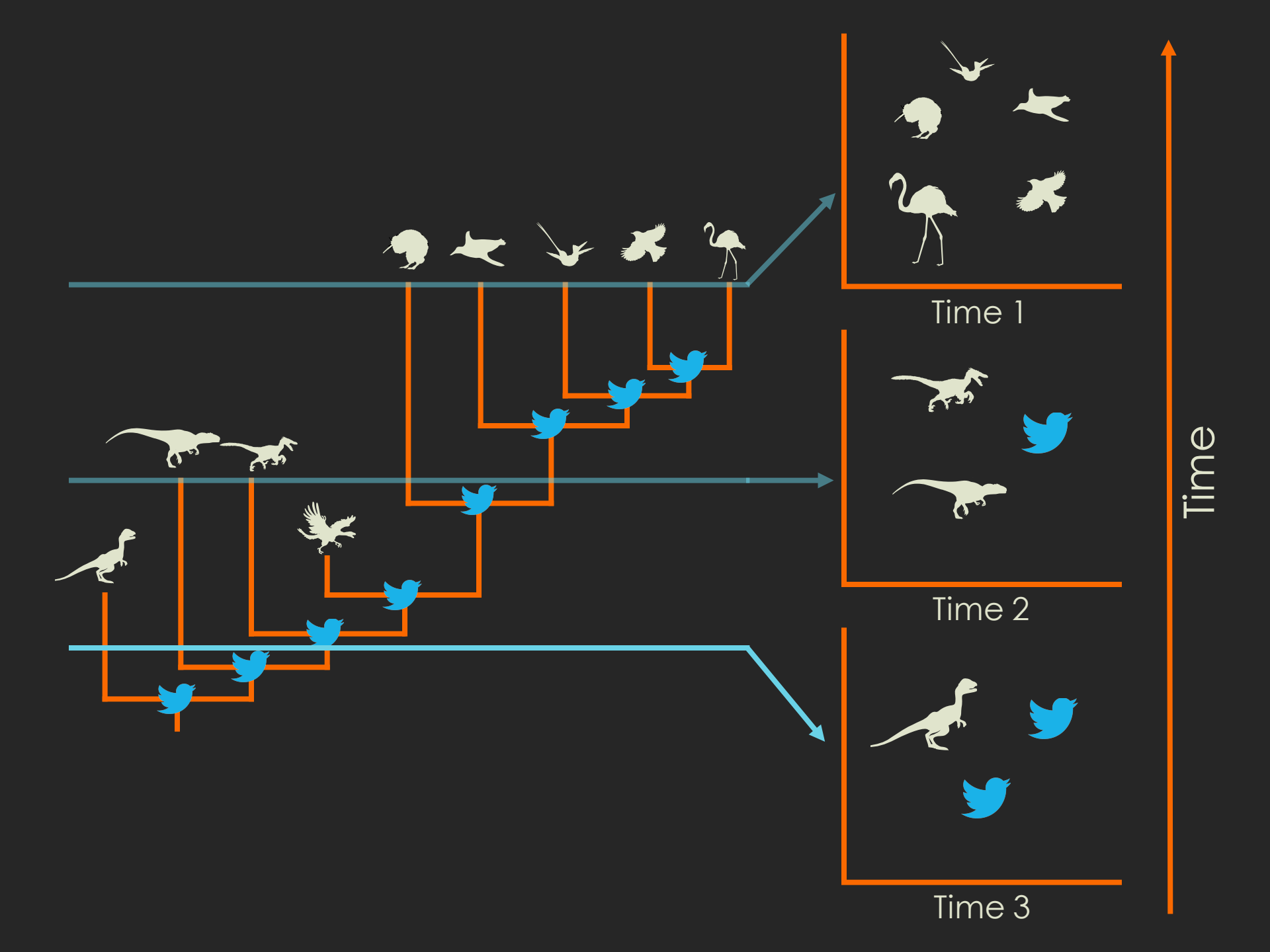

Time 1
Time

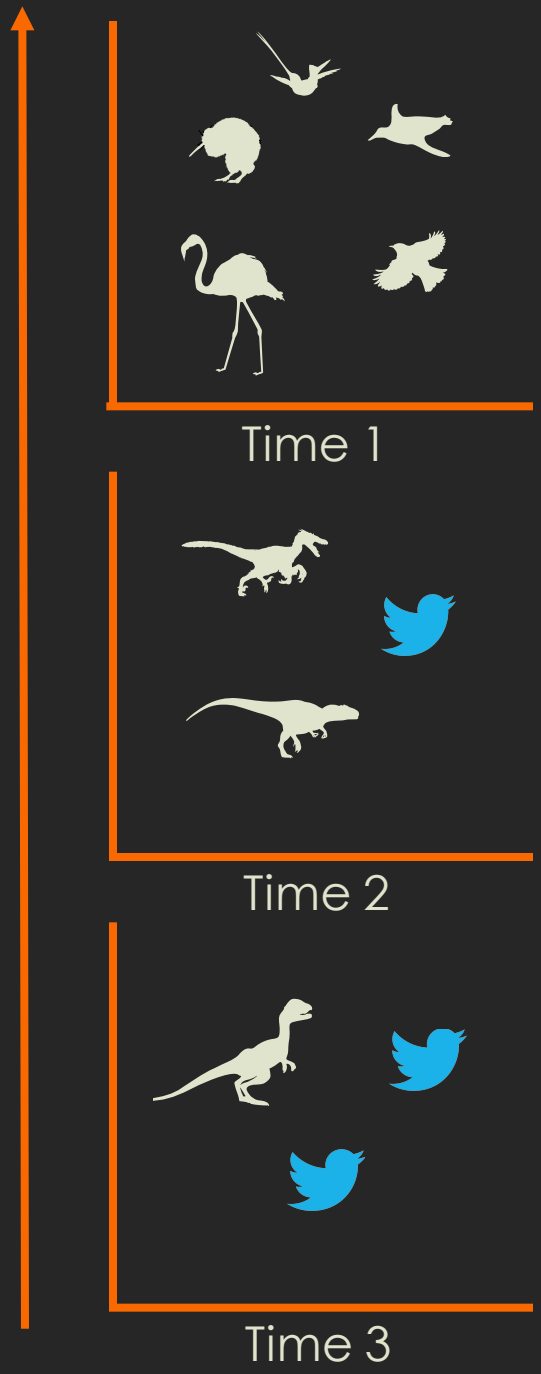

Time 1
Time

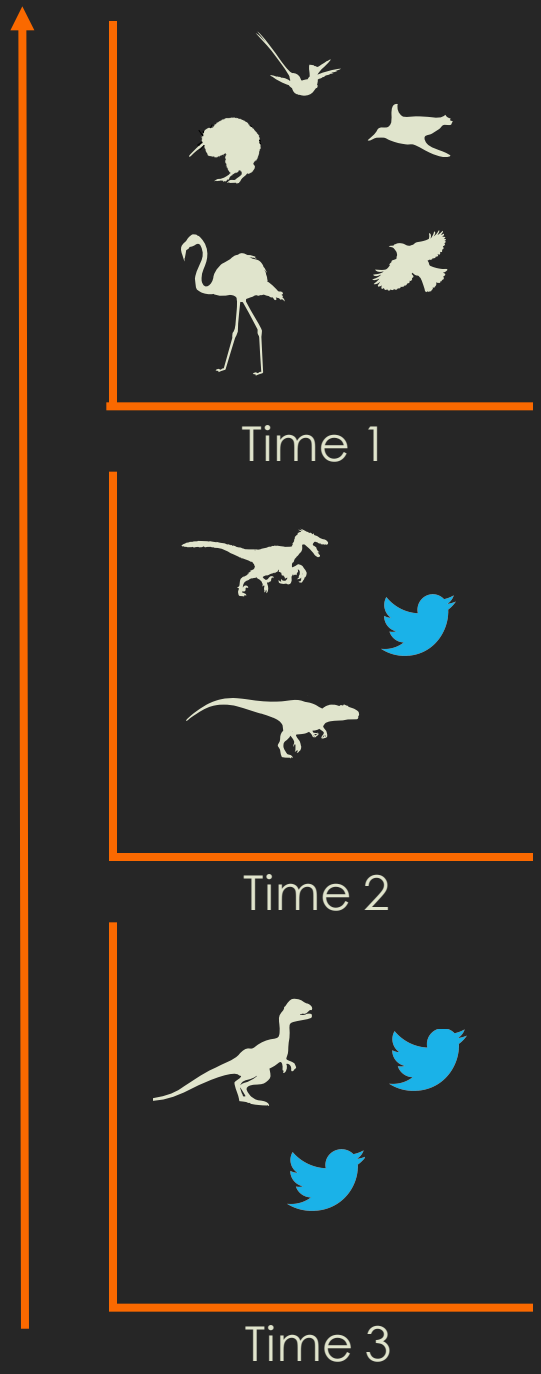

Time 1
Time 2
Time

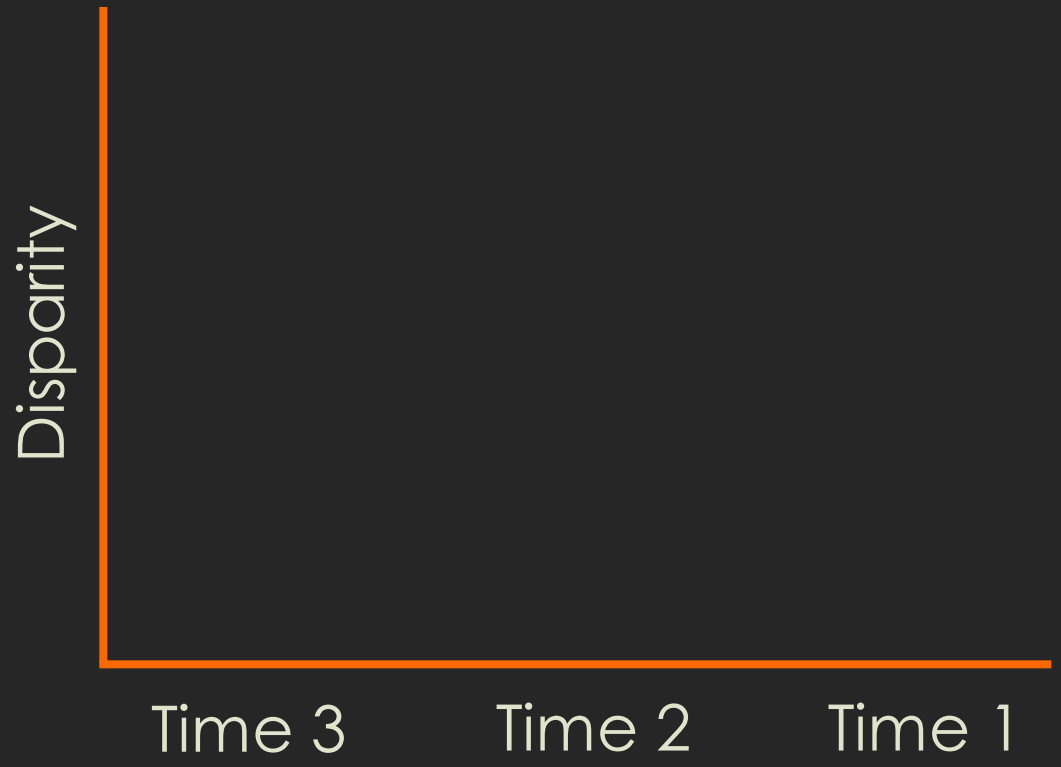

?
Time 1
Time 2
Time

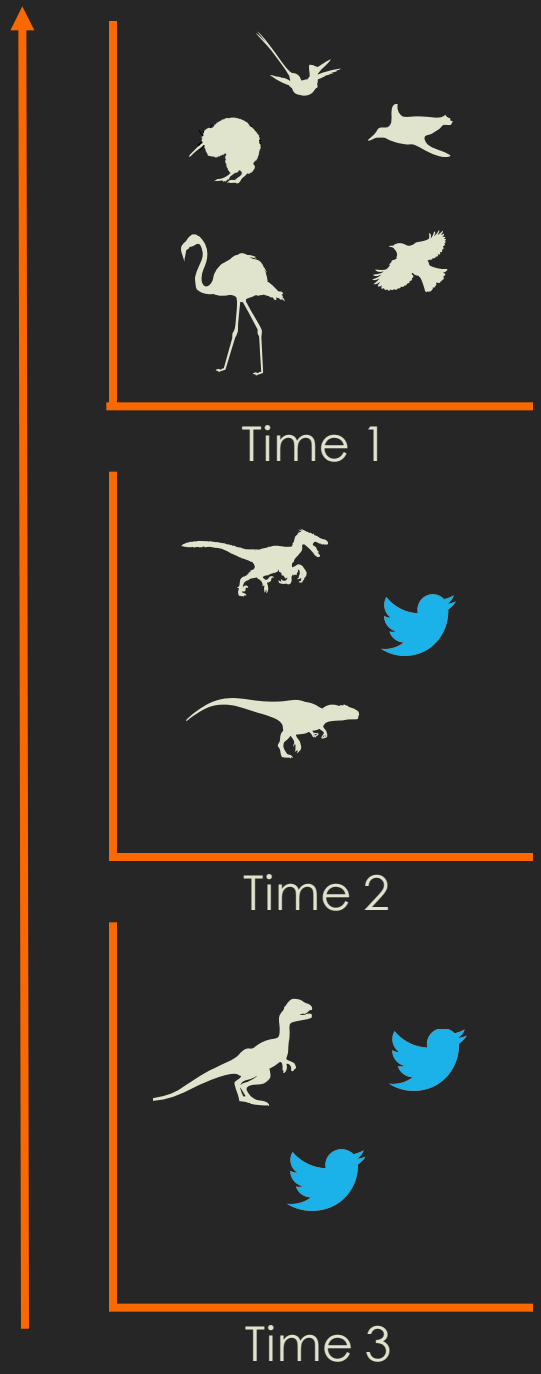

Time 1
Time 2
Time

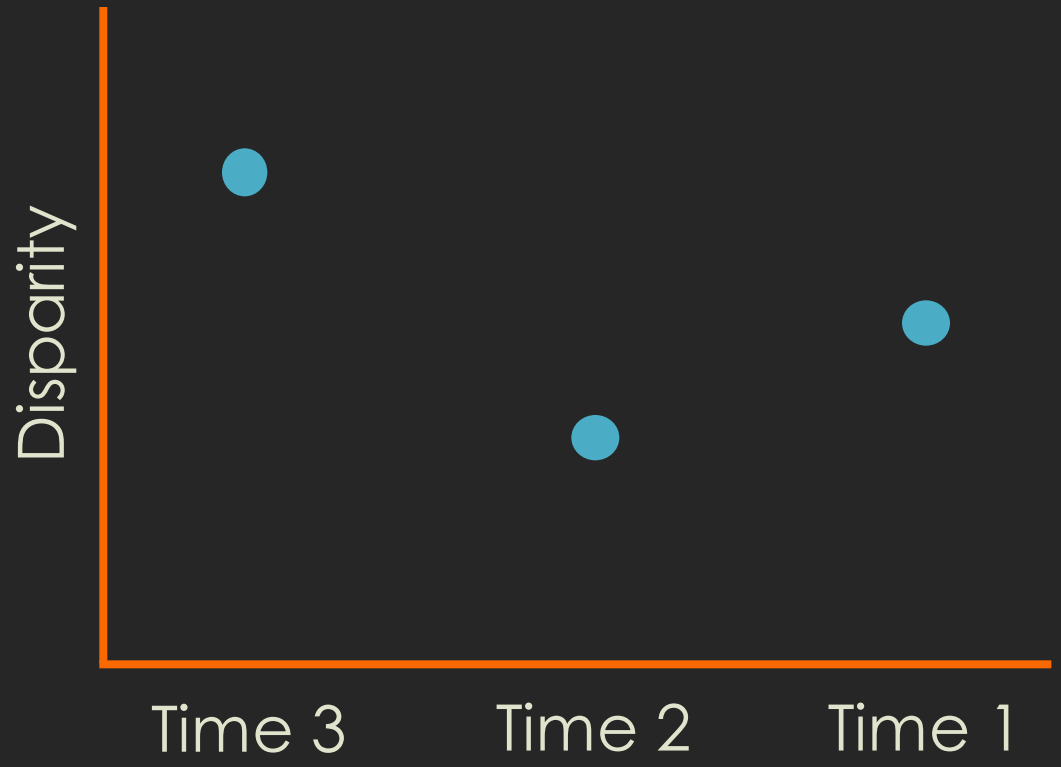

Time 1
Time 2
Time 3
Time

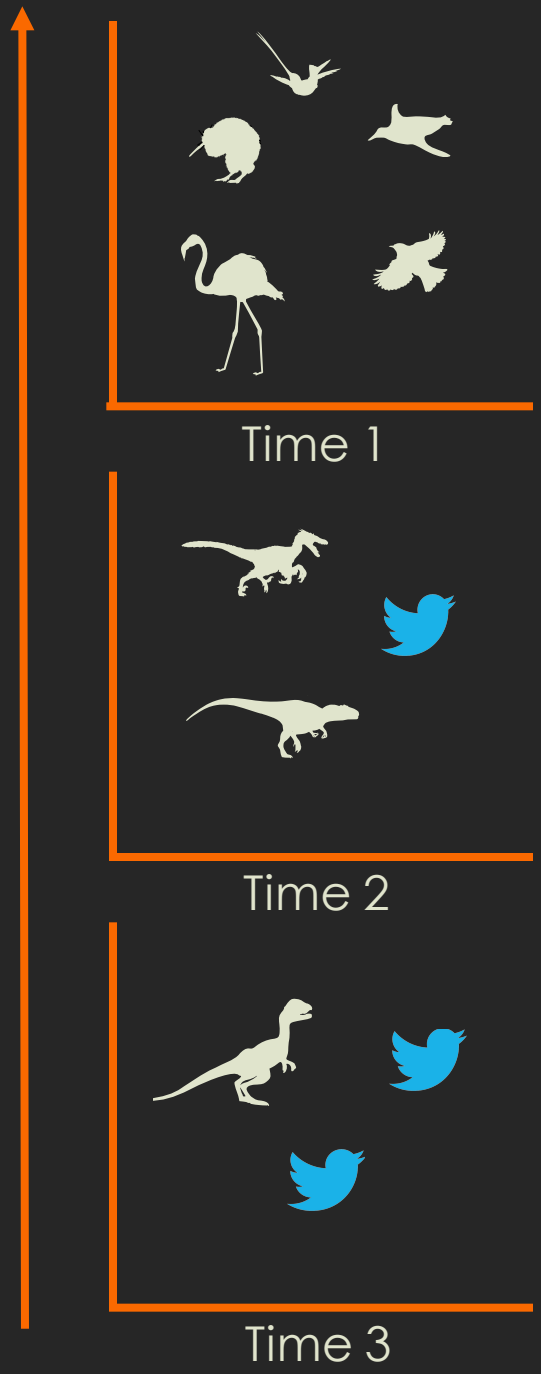

Time 1
Time 2
Time 3

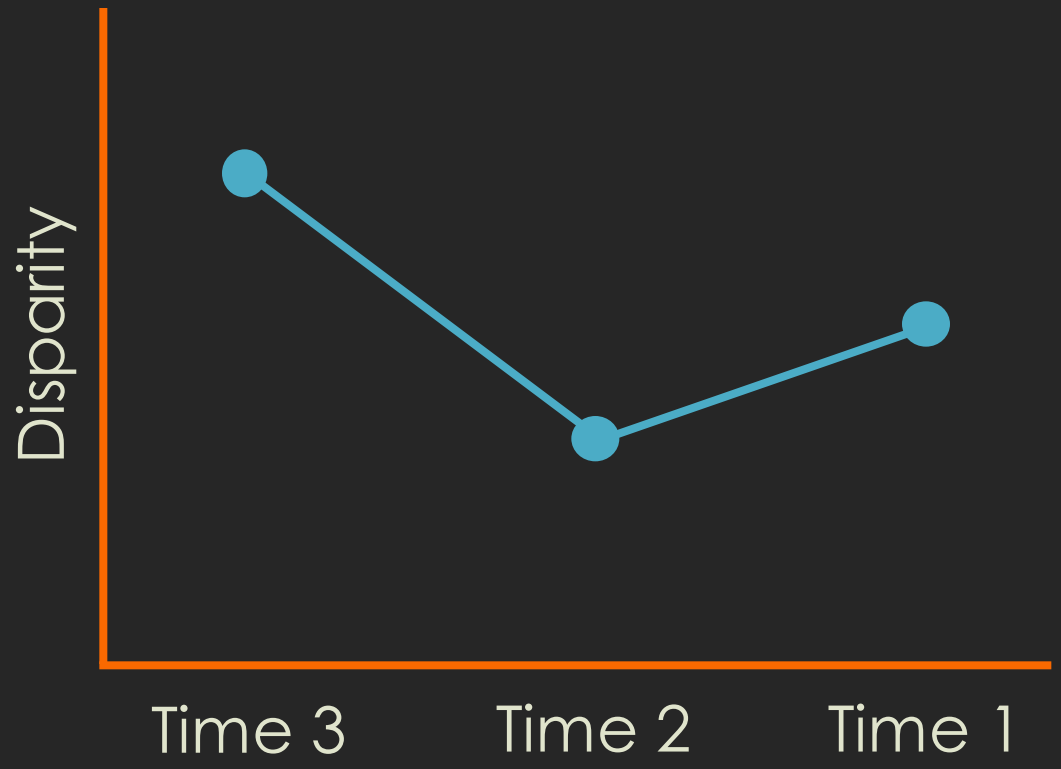

Time 1
Time 2
Time 3

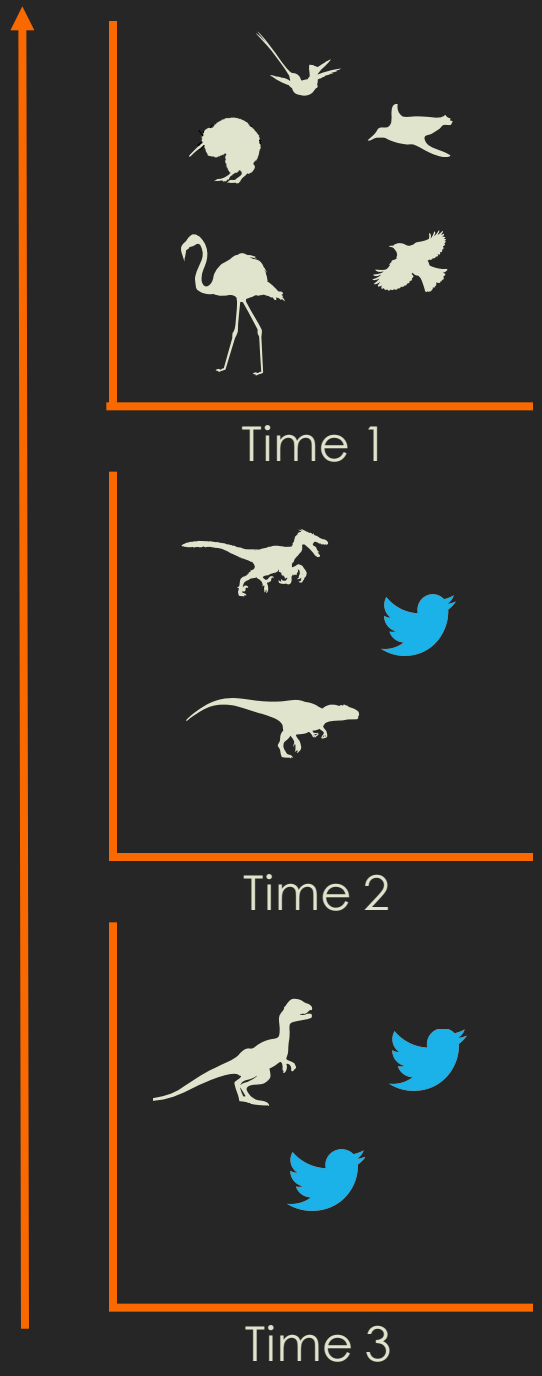

Disparity
Time 3
Time 2
Time 1

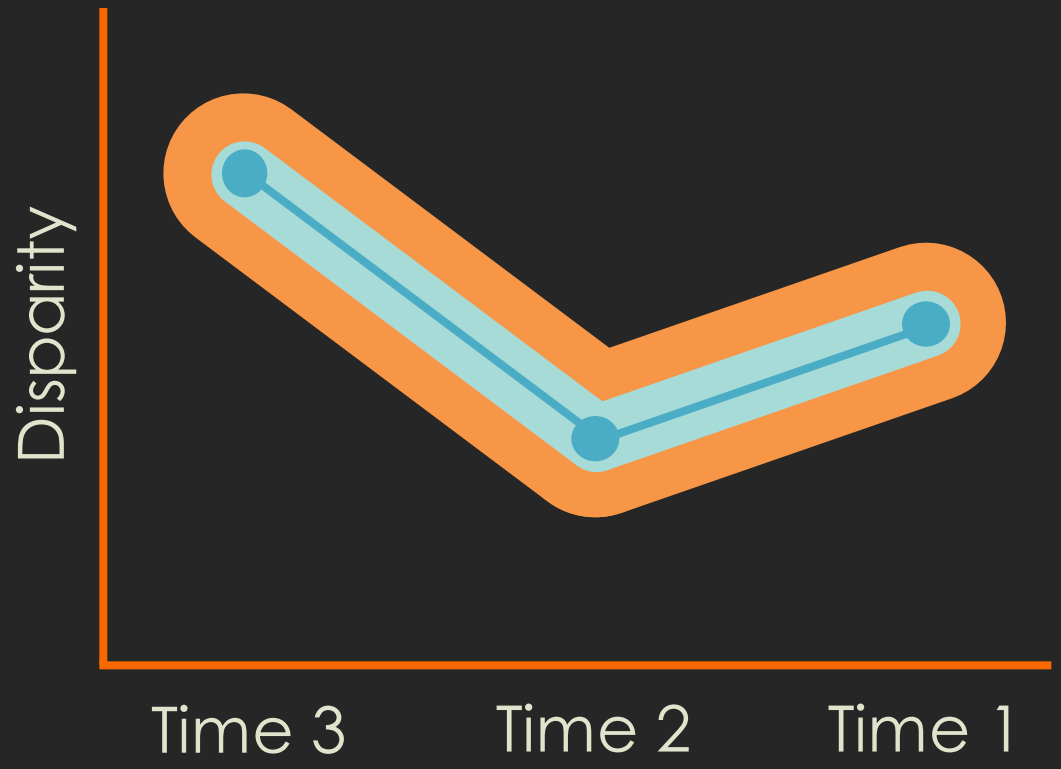

Time 1
Time 2
Time 3


Disparity
Time 3
Time 2
Time 1


Time 1
Time 2
Time 3

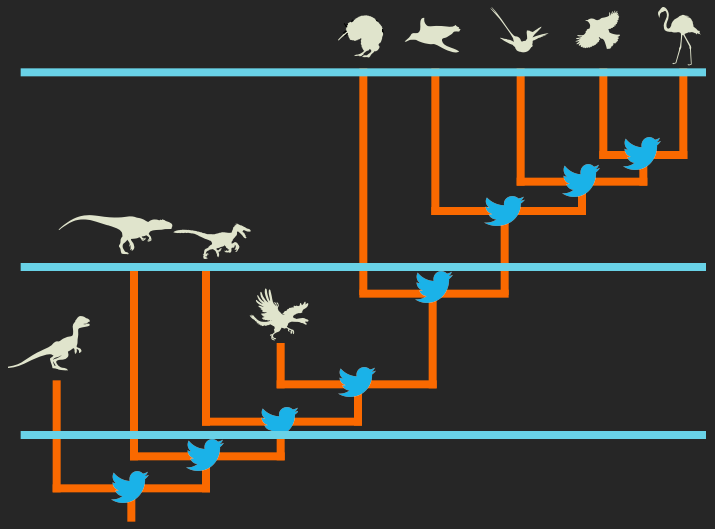

Disparity
Time 3
Time 2
Time 1

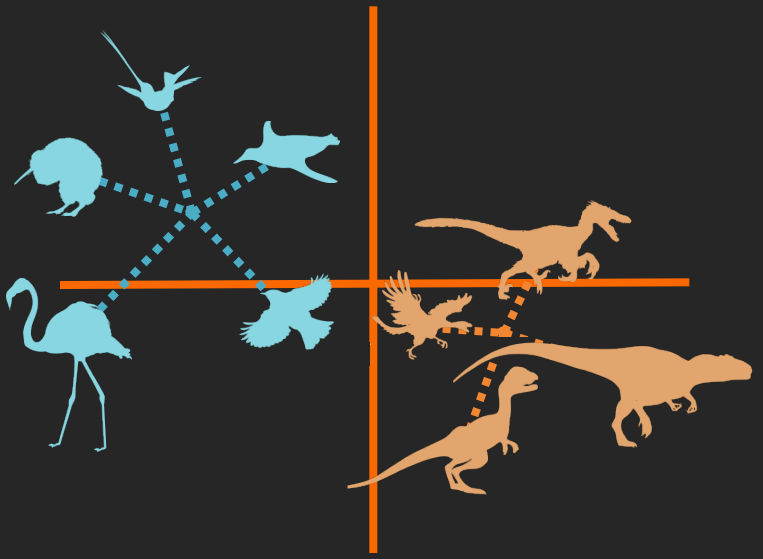

Time 1
Time 2
Time 3

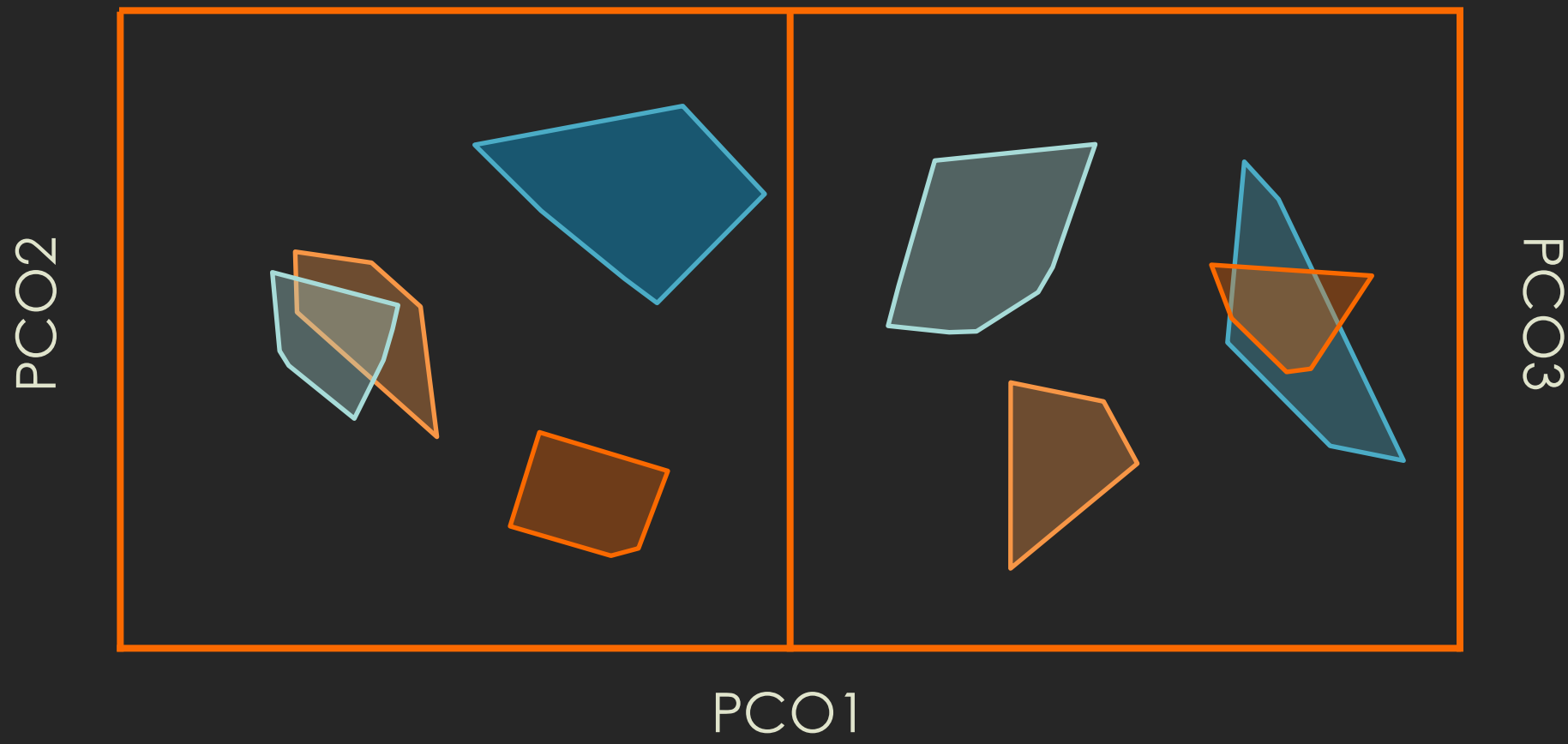

Disparity
Time 3
Time 2
Time 1

Thanks!

github.com/
TGuillerme/dispRity






PCO2
PCO3
PCO1

Modified from Figure 3 from Davis *et al.* 2012 (Nature)

