

Principles of Observability

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Observability
≠
Monitoring

Photo: CC-BY-2.0 Steve Parker (<https://flic.kr/p/afiseM>)

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Observability ≠ Dashboards

Photo: CC-BY-2.0 Jacob Frey 4A (<https://flic.kr/p/CkXwn6>)

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DEVOPSDAYS
ZURICH

Observability

≠

DevOps



Photo: © DevOpsDays Zurich (<https://flic.kr/p/TNbJPm>)

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Observability is a
measure of how well
internal states of a
system can be inferred
from knowledge of its
external outputs.

Measure

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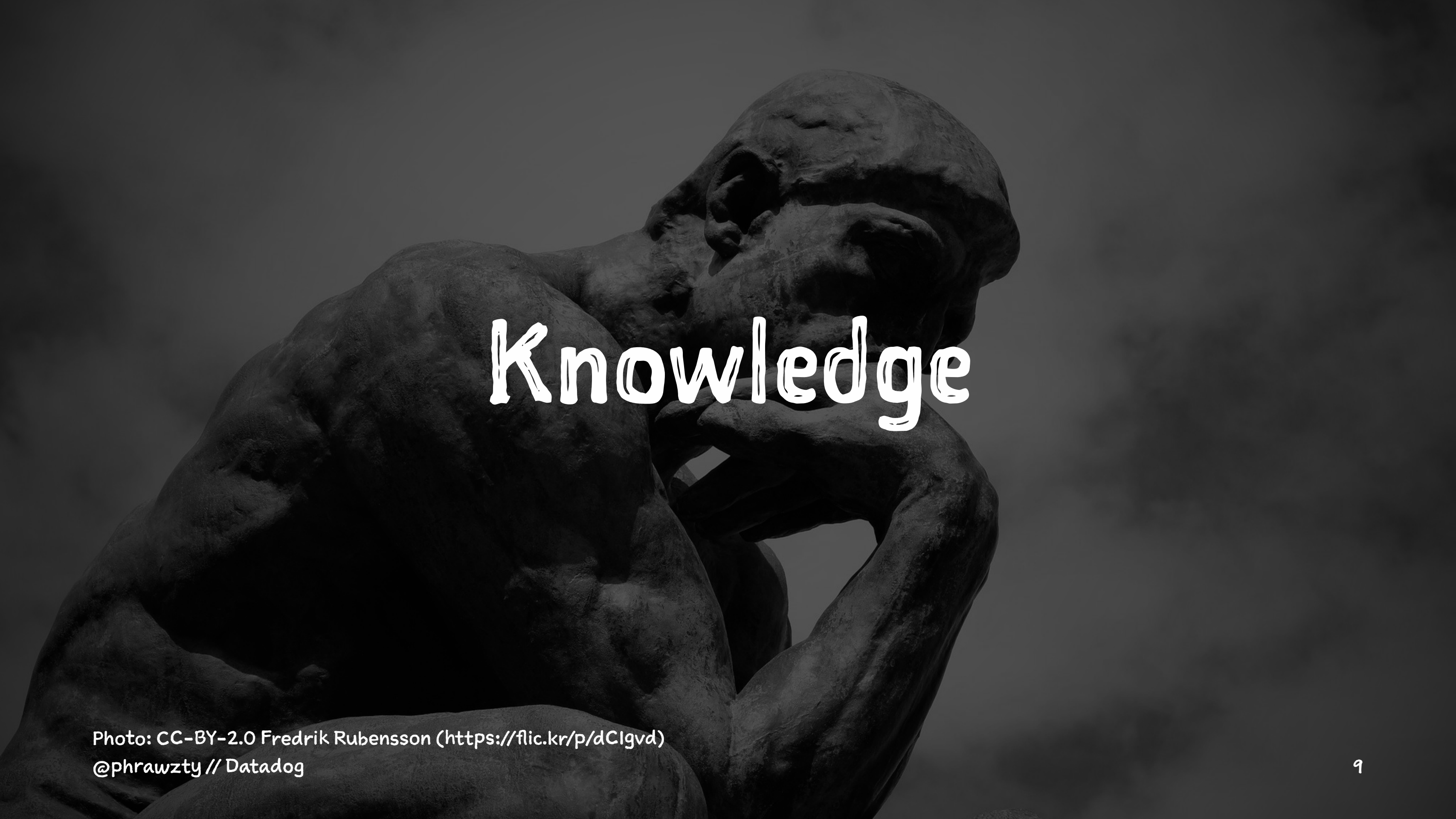
State

Photo: CC-BY-2.0 BenGrantham (<https://flic.kr/p/eQA3Zk>)
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System



Photo: CC-BY-2.0 Krzysztof Pędrys (<https://flic.kr/p/4tUNYV>)
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A dark, high-contrast photograph of a statue of The Thinker by Auguste Rodin. The statue is shown in a contemplative pose, with its head resting on its hand. The word "Knowledge" is overlaid in a large, white, stylized font across the center of the image.

Knowledge

Photo: CC-BY-2.0 Fredrik Rubensson (<https://flic.kr/p/dCIgvd>)
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Output

OUT 1 / LEFT

OUT 2 / RIGHT



Context is important

(...and control theory is vast)

Photo: CC-BY-SA dilettantiquity (<https://flic.kr/p/ppskuz>)
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State observer

Photo: CC-BY-SA John Dyhouse (<https://flic.kr/p/7ErCMc>)

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[Proprietors of "Knowledge"

General view of the Great Paris Telescope showing the eye-end The tube is 180 feet long and 50 inches in

Multi & Bounding observer

Interval & Luenberger observers

Positive systems! Moving horizon estimations!

Kalman filters in general topological spaces!

Photo: CC-BY-SA https://en.wikipedia.org/wiki/State_observer

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"The Three Pillars"



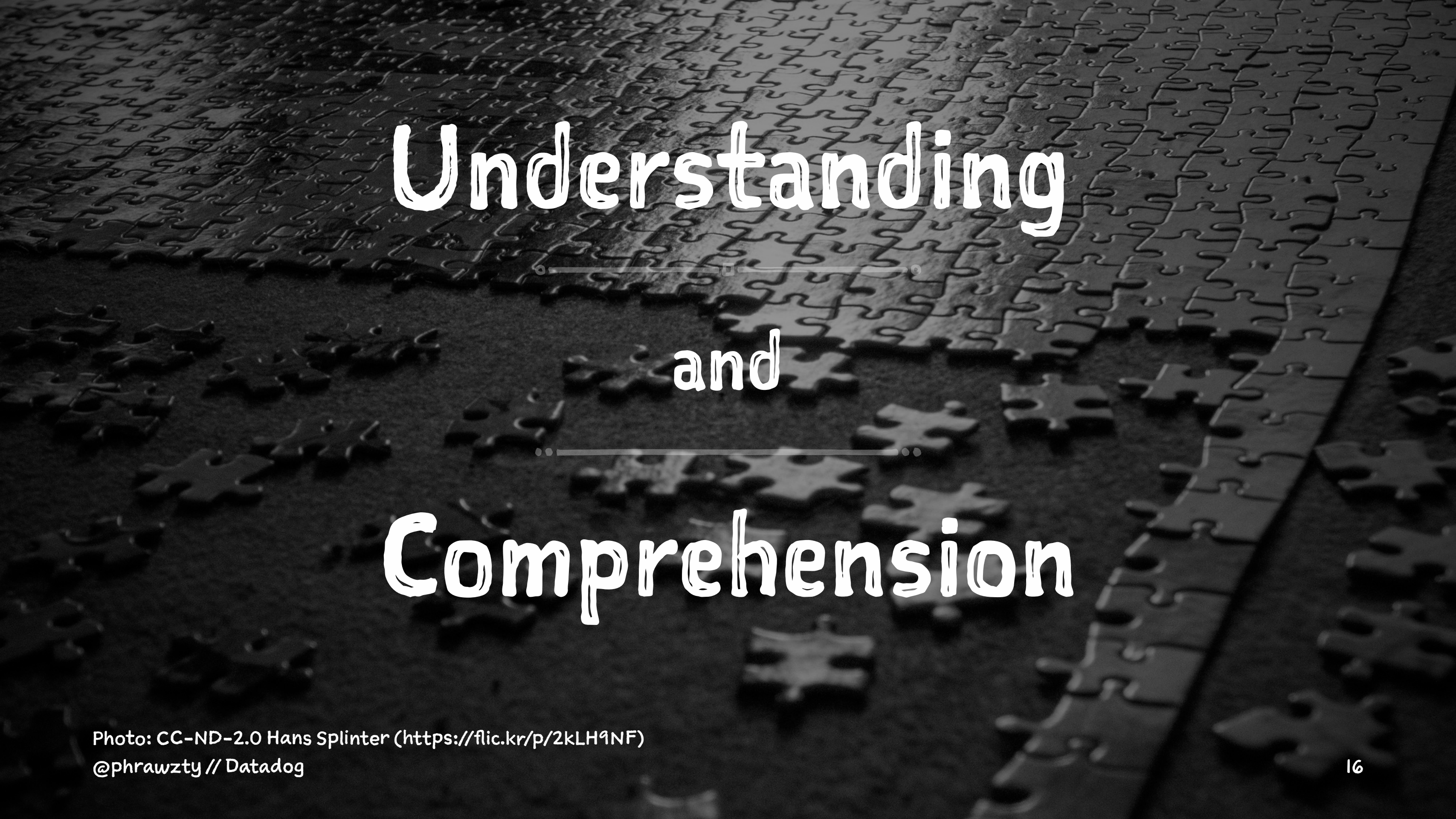
Photo: CC-BY-2.0 Andrew (<https://flic.kr/p/xy6rdF>)
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Events, Signals, Telemetry, Paths, Stories...

Photo: CC-BY-2.0 Steve Jurvetson (<https://flic.kr/p/2mbX3RZ>)

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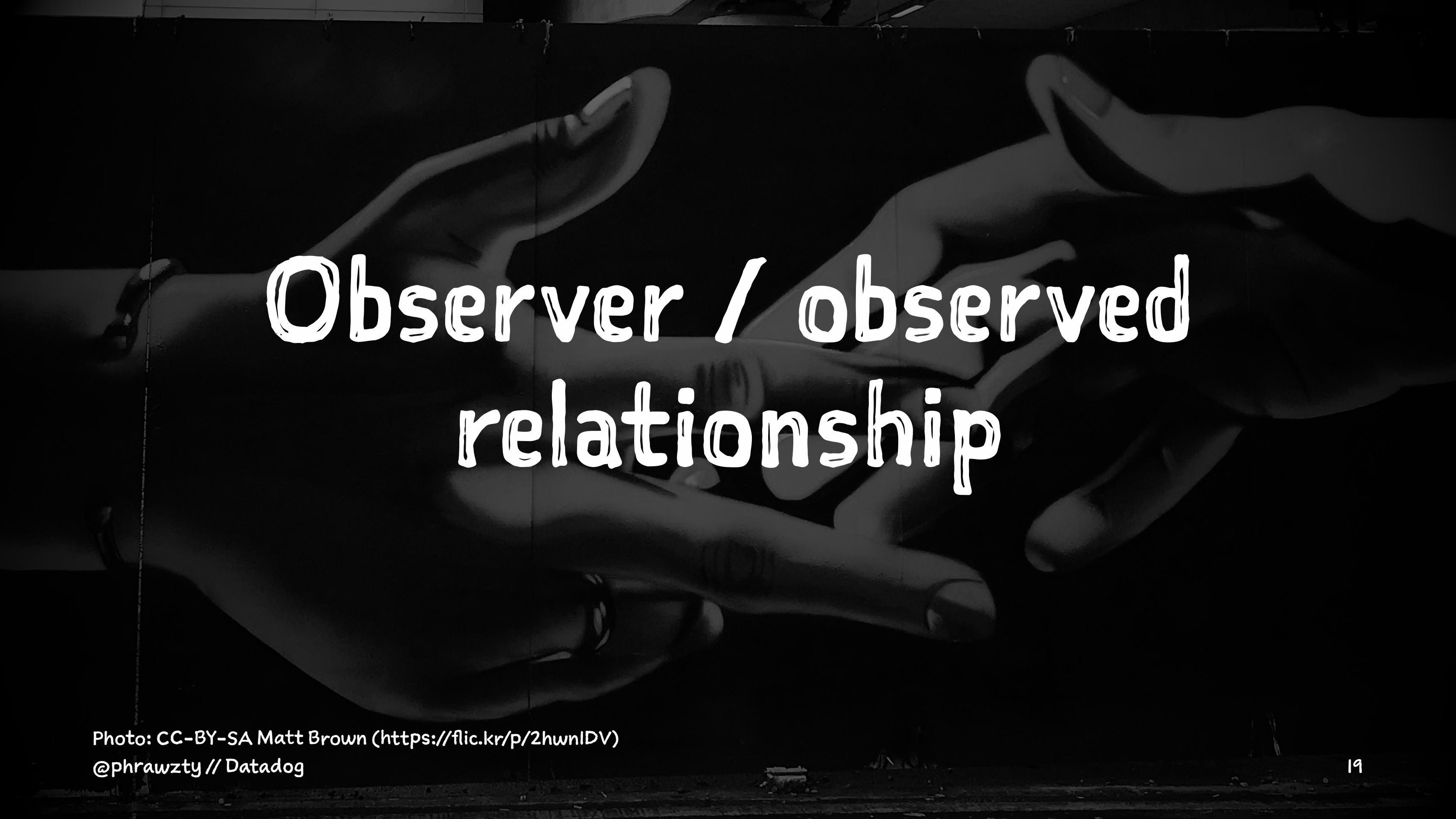
Understanding and Comprehension

Unknown unknowns

Photo: CC-BY-SA Stinging Eyes (<https://flic.kr/p/9kreao>)
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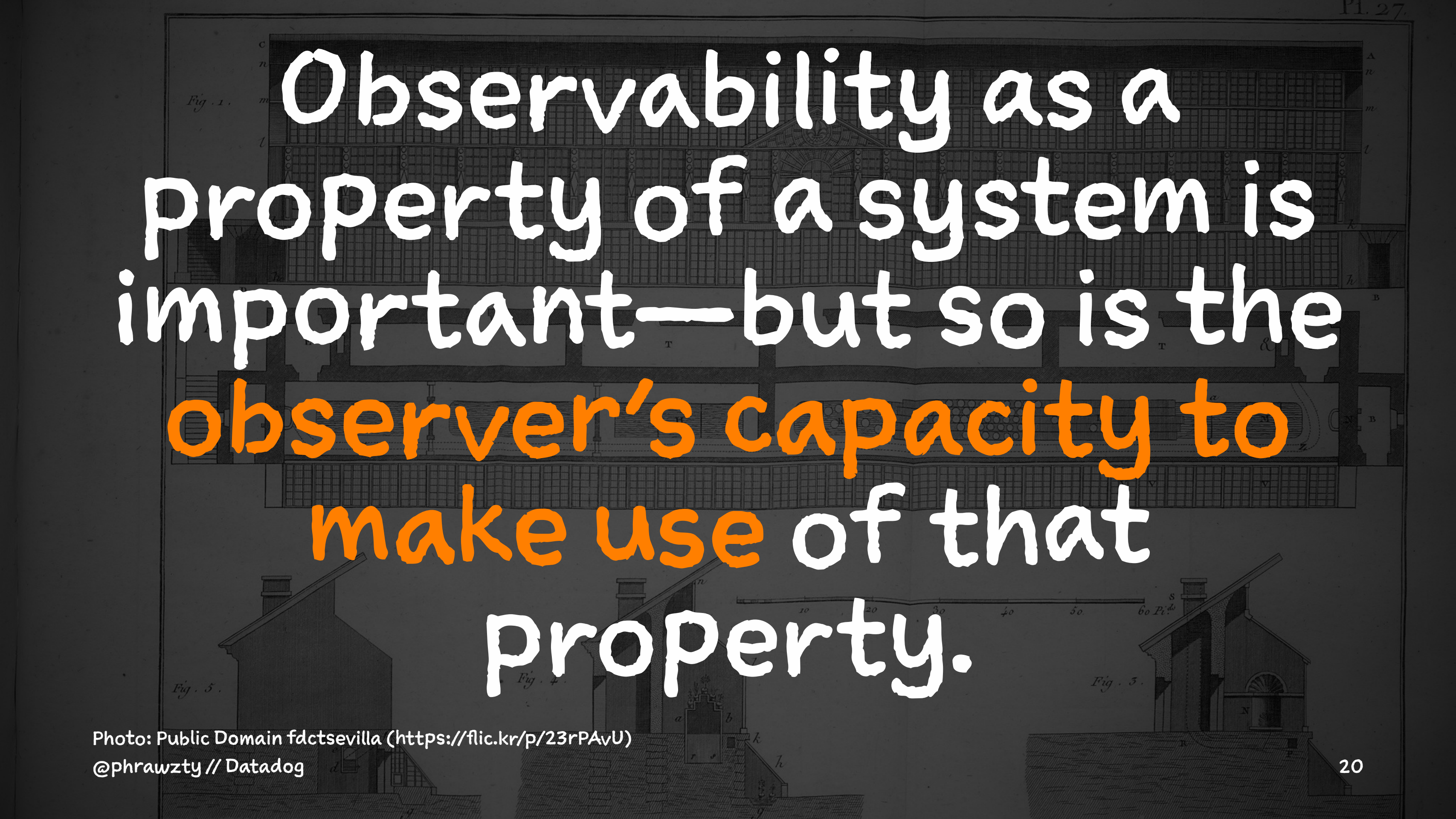
Ok, so,
practically-speaking,
what is observability?!



Observer / observed relationship

Photo: CC-BY-SA Matt Brown (<https://flic.kr/p/2hwnIDV>)

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Observability as a
property of a system is
important—but so is the
observer's capacity to
make use of that
property.