

Lecture 2 - The Garden of Forking Ideas

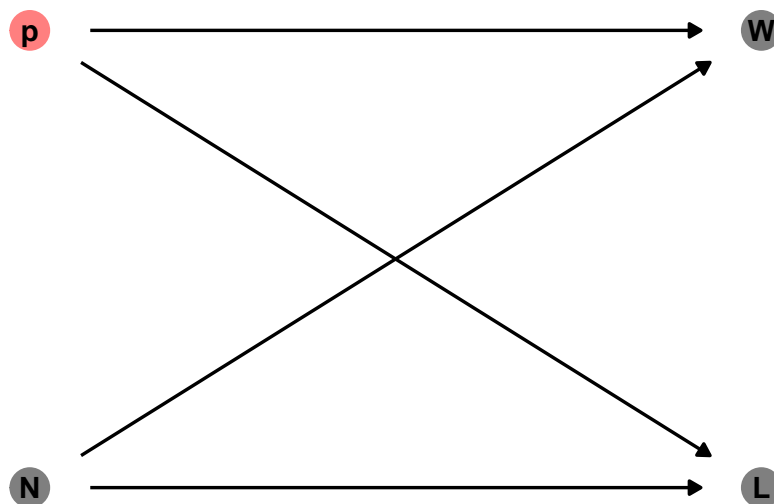
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Bayesian Workflow

1. Define our generative model
2. Define our estimand
Amount of water p
3. Design a statistical way for this estimand
4. Test 3) using 1)
5. Analyze sample, summarize

What could be a generative model of the globe example?

Incorporate previous knowledge, how could the data arise?



This Dag says that $W, L = f(p, N)$.

Cool what now?.

Bayesian Data Analysis is basically just:

- For each possible explanation of the sample, we want to count all ways a sample me be produced. Explanations with more ways to produce the sample are more plausible

Probability

```

# simulate data of our code
throw_world <- function(p = .7, N = 9) {
  sample(c(
    "W", "L"
  ), size = N,
  prob = c(p, 1 - p),
  replace = TRUE)
}

# function to compute the posterior
compost <- function(the_sample, poss = c(0, .25, .5, .75, 1)){
  W <- sum(the_sample == "W")

```

```

L <- sum(the_sample == "L")
ways <- sapply(poss, function(q) q * 4^W * ((1 - q)*4)^L)
post <- ways/sum(ways)
bars <- sapply(post, function(q) rethinking::make_bar(q))
print(data.frame(poss, ways, post = round(post,3), bars))
}

compost(throw_world())

```

	poss	ways	post	bars
1	0.00	0	0.00	
2	0.25	36864	0.45	#####
3	0.50	32768	0.40	#####
4	0.75	12288	0.15	###
5	1.00	0	0.00	

Testing