

THE LITTLE BOOK

OF

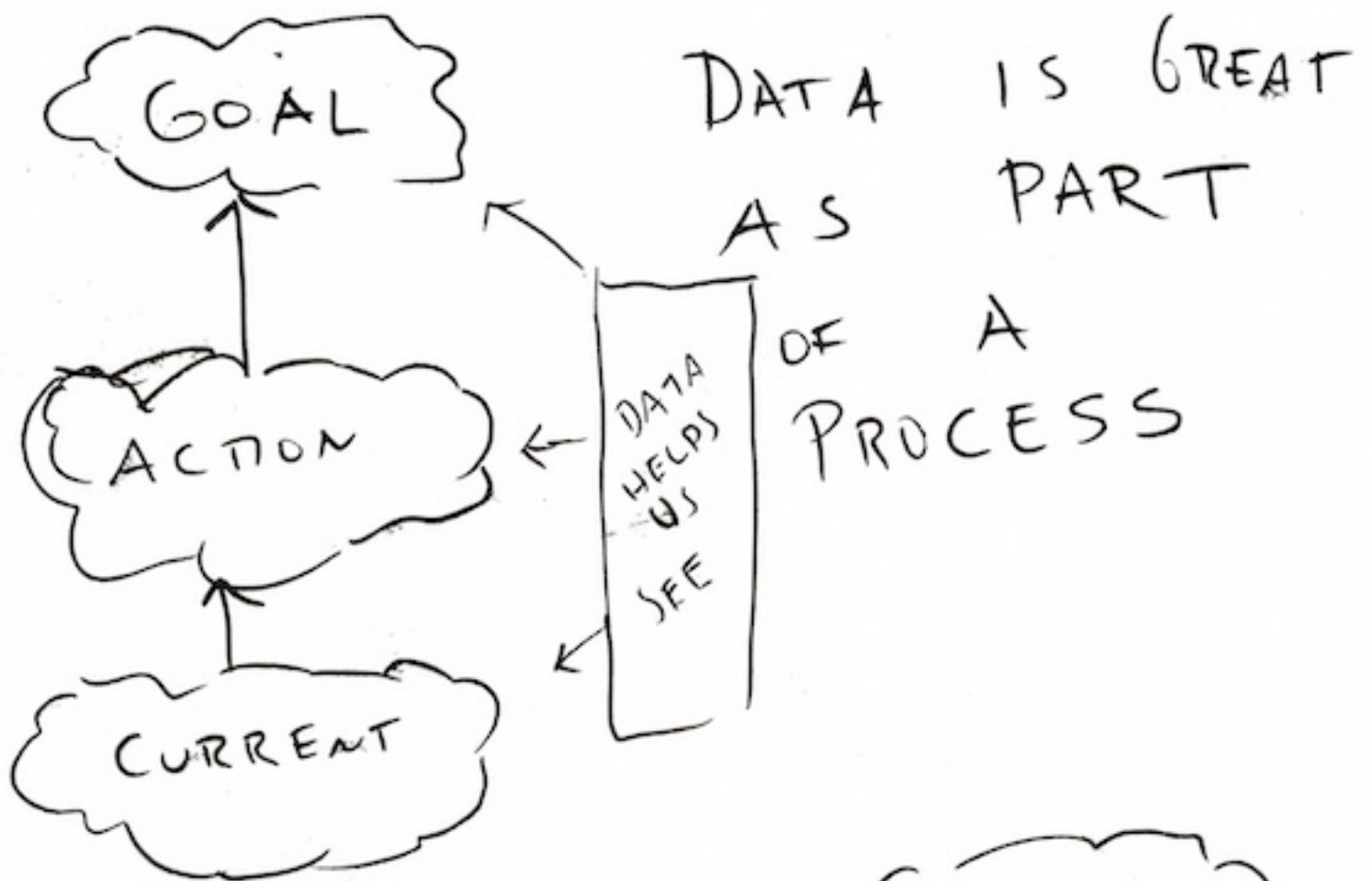


BIG

DATA

FALLACIES

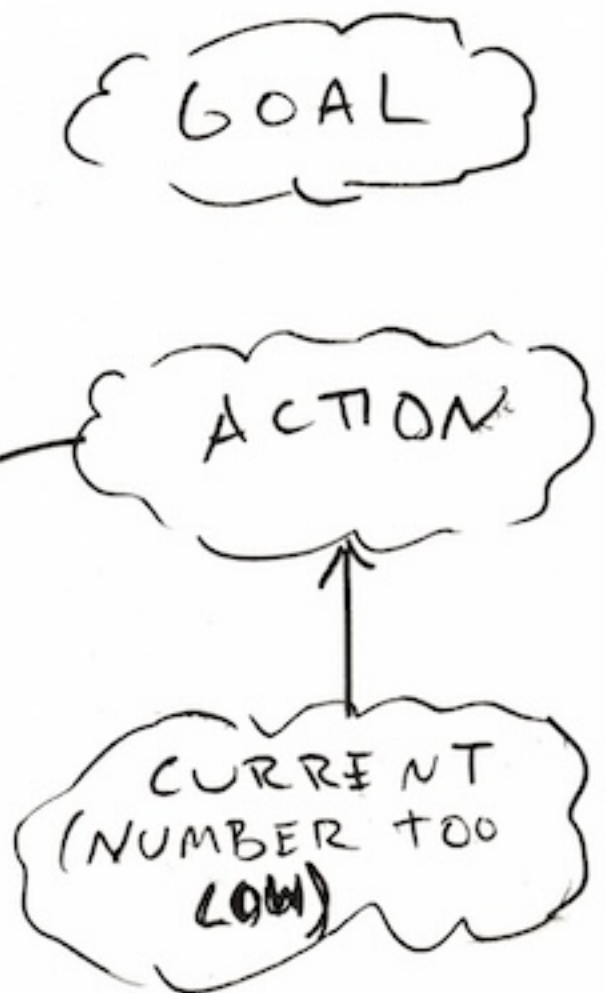
TOM RADEMACHER



UNFORTUNATELY,
WHAT WE OFTEN
SEE IS DATA

AS

THE GOAL,
WHICH MESSES
EVERYTHING UP.



THERE'S A FEW PERVASIVE
DATA FALLACIES THAT
ARE REAL GOOD AT
DISTRACTING US FROM
OUR ACTUAL GOALS.

- NUMBERS DON'T LIE
- NUMBERS TELL THE WHOLE STORY
- NUMBERS DON'T HAVE FEELINGS

A LOT OF THESE
FALLACIES ARE
ROOTED IN MINDSETS
THAT ARE TOO
EASILY ADOPTED
BECAUSE THEY'RE
JUST SO DAMN
APPEALING.

YES THEY DO, NO THEY DON'T, YES THEY DO.
WANT PROOF? KEEP READING.

THE

McNAMARA FALLACY:

WHEN YOU CAN'T MEASURE WHAT IS IMPORTANT, YOU MAKE IMPORTANT WHAT YOU CAN COUNT

SEC. OF DEFENSE ROBERT
MCNAMARA TRIED
TO REDUCE STRATEGY
IN THE VIETNAM
WAR TO ONLY
QUANTIFIABLE
METRICS.



THIS IS NOT TO BE CONFUSED WITH THE McNAMARA Folly, ALSO NAMED FOR THE SAME DUDE. IF WE'RE TALKING QUANTIFIABLE METRICS, HOW ABOUT THE NUMBER BAD THINGS NAMED AFTER YOU?

A SMALL ASSIGNMENT: GO ASK
100 PEOPLE WHO THEIR BEST TEACHER
WAS, AND THEN ASK WHY. I'LL WAIT.

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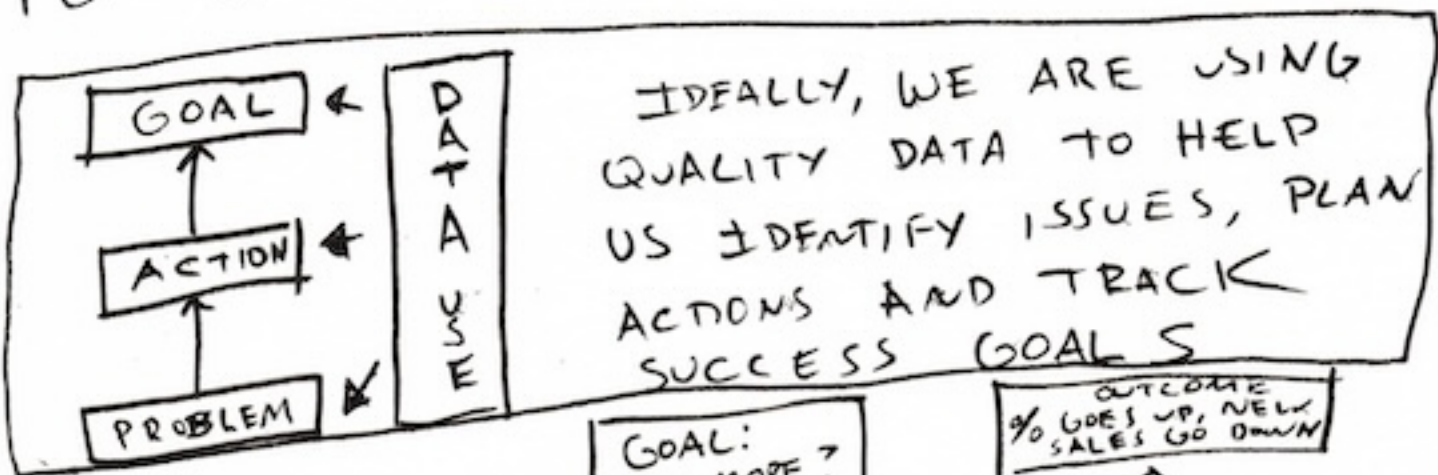
HOW MANY ANSWERS WERE EASILY
MEASURABLE THINGS? WHERE
DO WE PUT 'INSPIRED ME TO STUDY SPACE'
ON A GRAPH. HOW MANY IS 'BELIEVED
TAXI ME IN A WAY NO ONE HAD?'



10,000 STEPS A
DAY WILL MAKE
YOU HEALTHIER.

GOODHART'S LAW

WHEN A MEASURE BECOMES A TARGET, IT CEASES TO BE A GOOD MEASURE



I WAS IN A MEETING ONCE WITH A MARKETING DIRECTOR BRAGGING ABOUT HOW MUCH THEIR EMAIL 'HIT RATE PERCENTAGE' HAD GONE UP SINCE THEY STARTED CUTTING OUT POTENTIAL CUSTOMERS WHO HAD NOT YET BOUGHT ANYTHING. TEXTBOOK GOODHART, THE ACTUAL GOAL OF SELLING HAD BEEN FORGOTTEN IN THE QUEST FOR TARGET DATA.



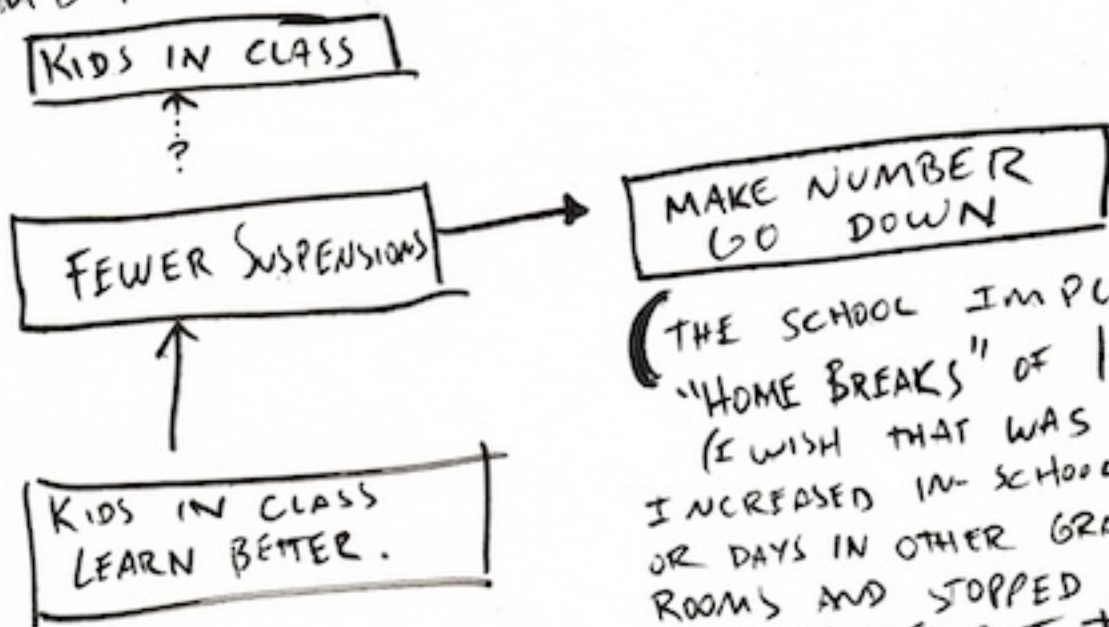
GOODHART AT SCHOOL

IN A BUILDING I WORKED, THERE WAS A PUSH TO KEEP MORE STUDENTS IN CLASS AS OFTEN AS POSSIBLE, ESPECIALLY FOCUSING ON REDUCING SUSPENSIONS, WHICH WERE ALSO ILLUSTRATING A RACIAL BIAS IN HOW DISCIPLINE WAS APPLIED.

WE HAD A GOAL: KIDS IN CLASS

WE HAD A DATA POINT: SUSPENSION #'S

BUT INSTEAD OF DOING WORK AND GIVING THE SUPPORT NEEDED TO GET AND KEEP KIDS LEARNING IN THEIR CLASSROOM, THE FOCUS WAS ON BRINGING SUSPENSION NUMBERS DOWN.



(THE SCHOOL IMPLEMENTED "HOME BREAKS" OF 1-3 DAYS (I WISH THAT WAS A JOKE) INCREASED IN-SCHOOL SUSPENSIONS OR DAYS IN OTHER GRADE-LEVEL ROOMS AND STOPPED ADDRESSING SOME SIGNIFICANT & DANGEROUS BEHAVIOR.)

CAMPBELL

COBRAS

CAMPBELL'S LAW: THE MORE IMPORTANT A METRIC IS IN SOCIAL DECISION MAKING, THE MORE LIKELY IT IS TO BE MANIPULATED

CAMPBELL AND GOODWIN WORK TOGETHER WELL, AND ARE ILLUSTRATED WELL WITH WHAT ECONOMIST HORST SIEBERT CALLED 'THE COBRA EFFECT' WHICH I WILL SHOW HERE FOR NO REASON NEXT TO AN ILLUSTRATION OF HIGH-STAKES TESTING.

COBRA EFFECT

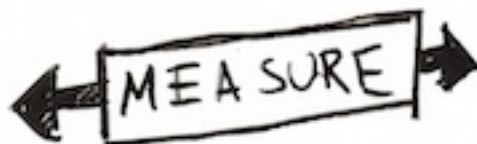
FEWER DEADLY COBRAS IN THE AREA



OFFER A BOUNTY ON DEAD COBRAS



MORE DEAD COBRAS



PEOPLE BREEDING COBRAS IN ORDER TO COLLECT BOUNTY.



TESTING

MAKE SURE STUDENTS ARE LEARNING EFFECTIVELY IN SCHOOL

INSTITUTE HIGH-STAKES STANDARDIZED TESTING

CUMULATIVE TEST SCORES

YOU TELL ME.

BEE S

NUT S

TOM'S LAW:

TIME SPENT MAKING DATA TO JUSTIFY THE WORK YOU'RE ALREADY DOING IS LIKE STINGING YOURSELF IN THE TESTICLES WITH A BEE JUST TO SEE IF IT HURTS.

ACTUAL
DIAGRAM FROM THE
STUDY



HERE'S THE PROBLEM:

- WITH A SAMPLE SIZE OF ONE (1), THESE RESULTS AREN'T USEFUL.
- WE CAN'T CONTROL BEES (SOURCE NEEDED) SO THIS ISN'T HELPFUL.
- WE DIDN'T NEED A STUDY TO KNOW THAT BEE STINGS IN OUR NOSE WOULD HURT.

IN 2014, SOCIAL INSECT BIOLOGIST MICHAEL SMITH STUNG HIMSELF REPEATEDLY IN 25 PLACES WITH BEES HE WAS HOLDING WITH FORCEPS TO DETERMINE WHICH SPOT HURT MOST.

I'M NOT KNOCKING SMITH, WHO HAS PUBLISHED A TON SINCE AND I LOVE WHEN SCIENTISTS DO WEIRD STUFF AND COULD TALK ABOUT THIS STUDY FOREVER.

SOMETIMES RESEARCH & DATA IS USEFUL AS METAPHOR

BACK TO THOSE MINDSETS:

NUMBERS DON'T LIE:

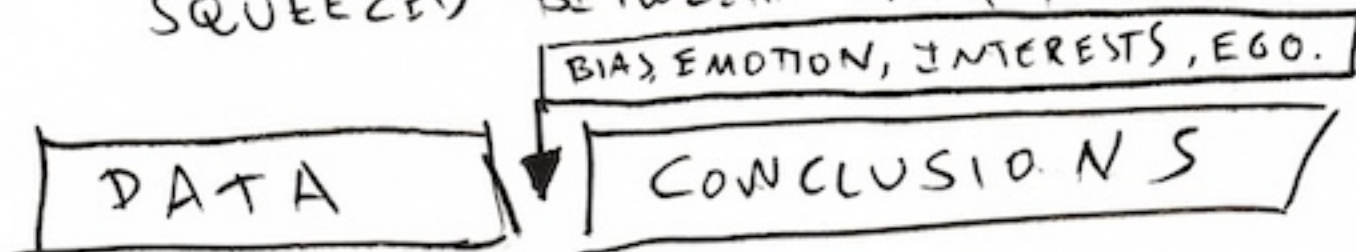
DATA CAN BE POORLY GATHERED,
SELECTIVELY SHARED, AND INCOMPLETE.
NUMBERS LIE ALL THE TIME.

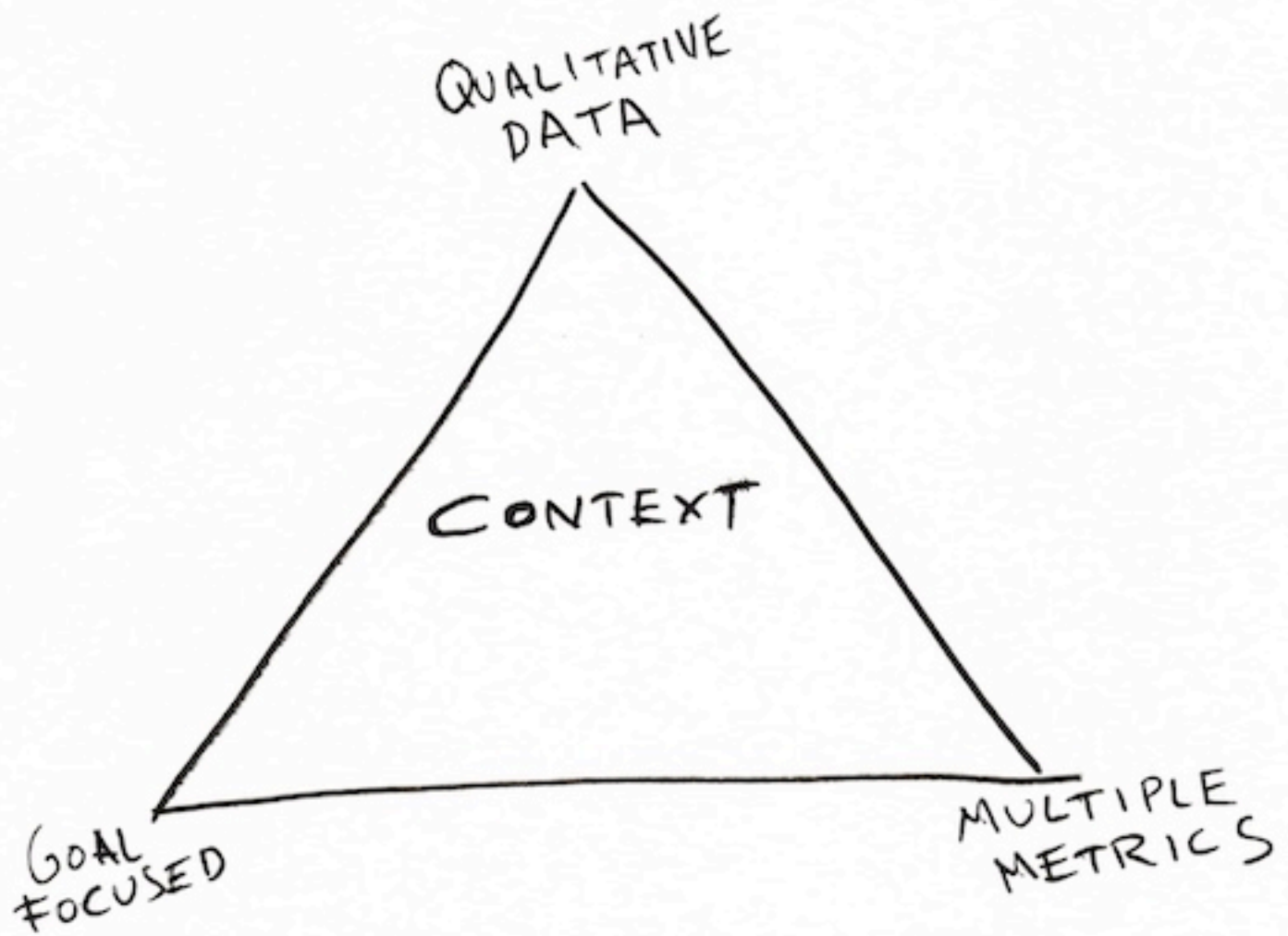
NUMBERS TELL THE WHOLE STORY:

I THINK IT'S FAIR TO SAY THAT
ANY NUMBER FEELS LIKE THE
COMPLETE STORY OF A COMPLEX
THING, THE LESS YOU KNOW ABOUT IT.

NUMBERS DON'T HAVE FEELINGS:

THIS IS THE ACADEMIC EQUIVALENT OF
INTERNET TROLLS WHO CLAIM TO ONLY
USING "FACTS & LOGIC" WHILE MELTING
DOWN. VERY BIG FEELINGS CAN BE
SQUEEZED BETWEEN DATA & CONCLUSIONS.





THIS BOOKLET IS NOT A CALL FOR A VIBES-BASED WORLD; BUT FOR US TO STEP BACK FROM THE DATA WE USE FOR IMPORTANT WORK AND ASK WHAT STORIES ARE MISSING, WHAT QUESTIONS NEED ASKING, WHERE OUR REAL GOALS MAY BE FORGOTTEN IN THE NUMBERS.



THIS BOOKLET WAS MADE
BY TOM RADEMACHER.

FOR A SOURCE LIST,
SHAREABLE VERSIONS,
AND OTHER WRITING:

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