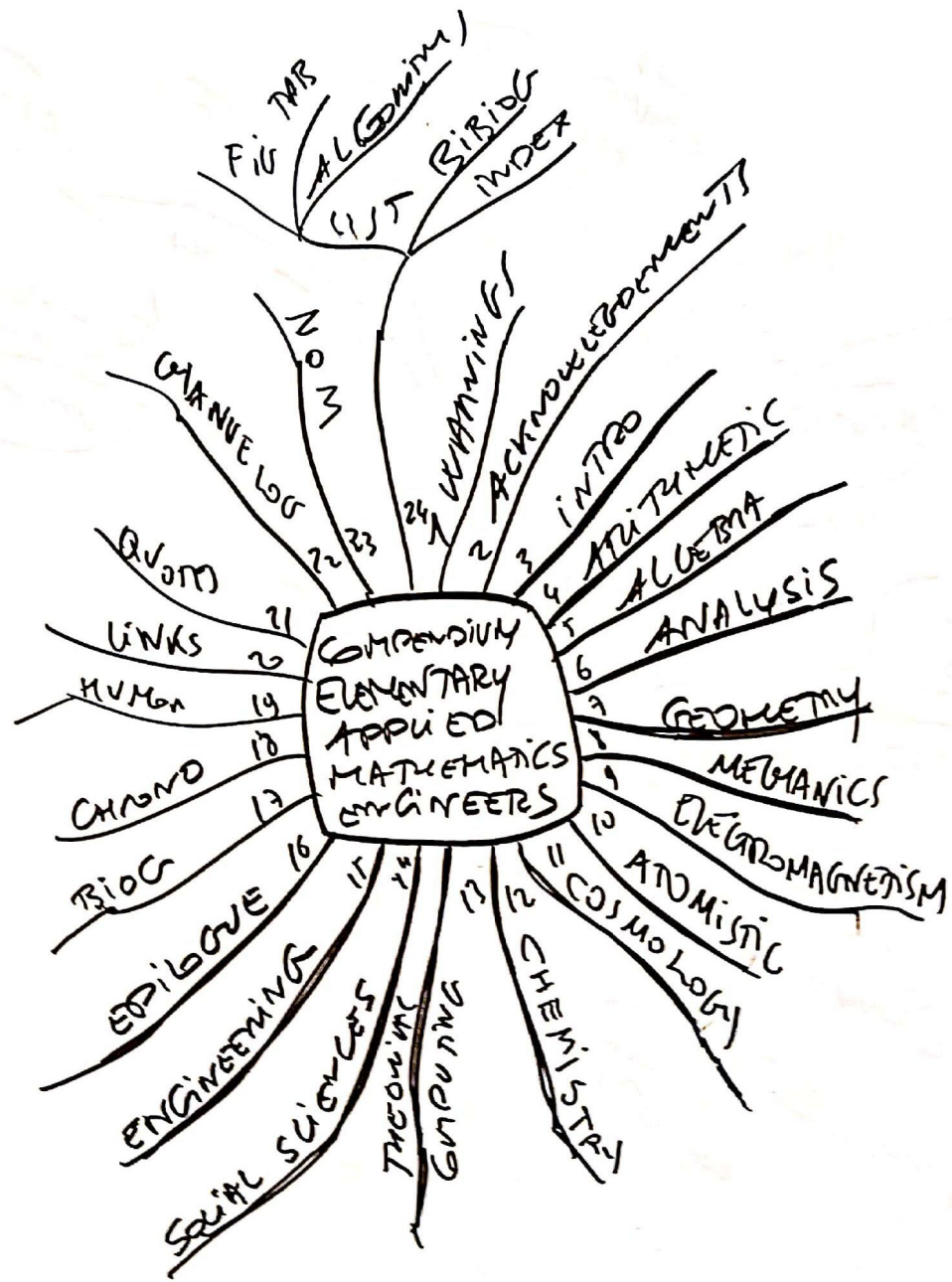
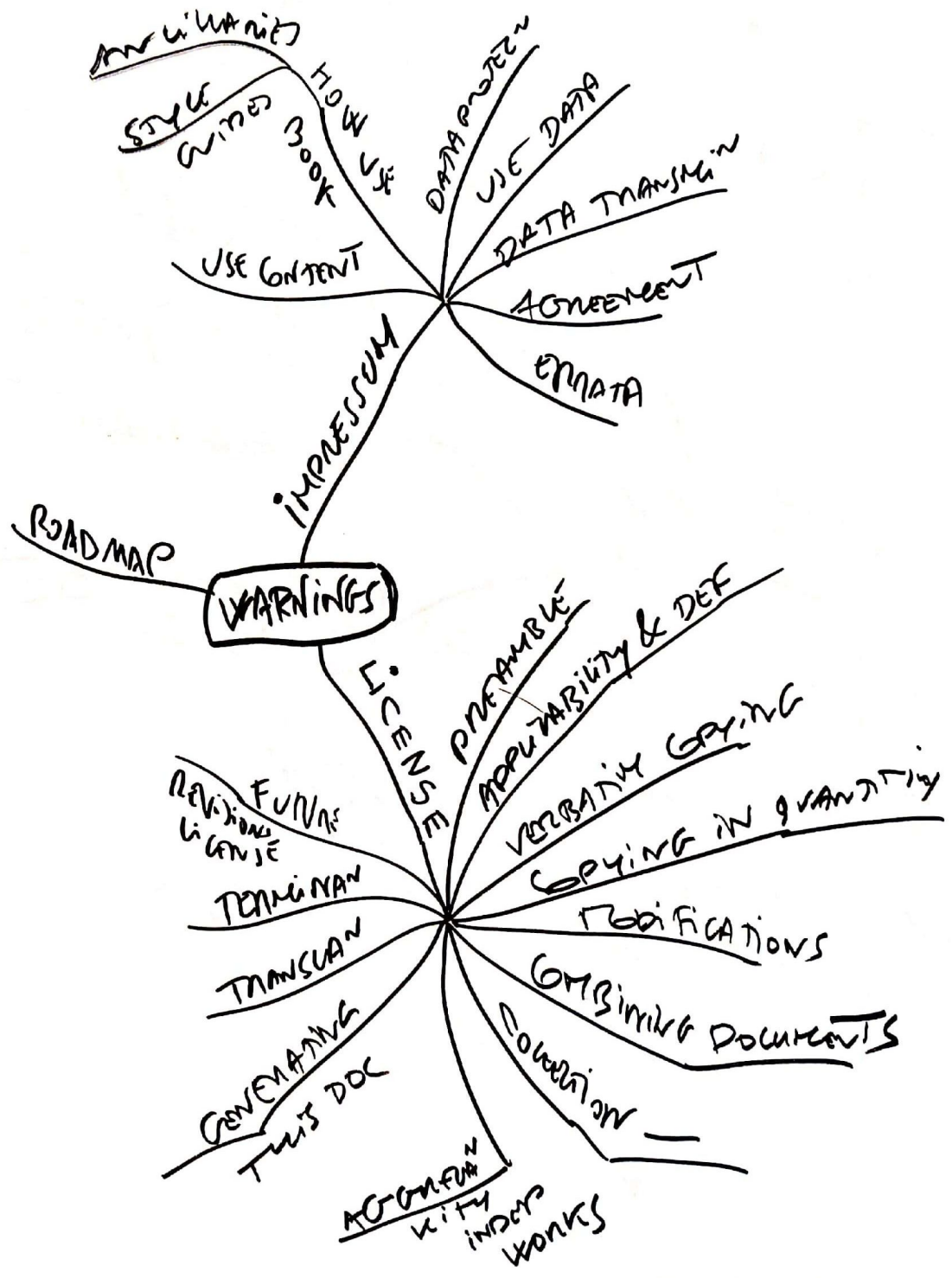


COMPENDIUM
ELEMENTARY
APPLIED
MATHEMATICS
FOR ENGINEERS

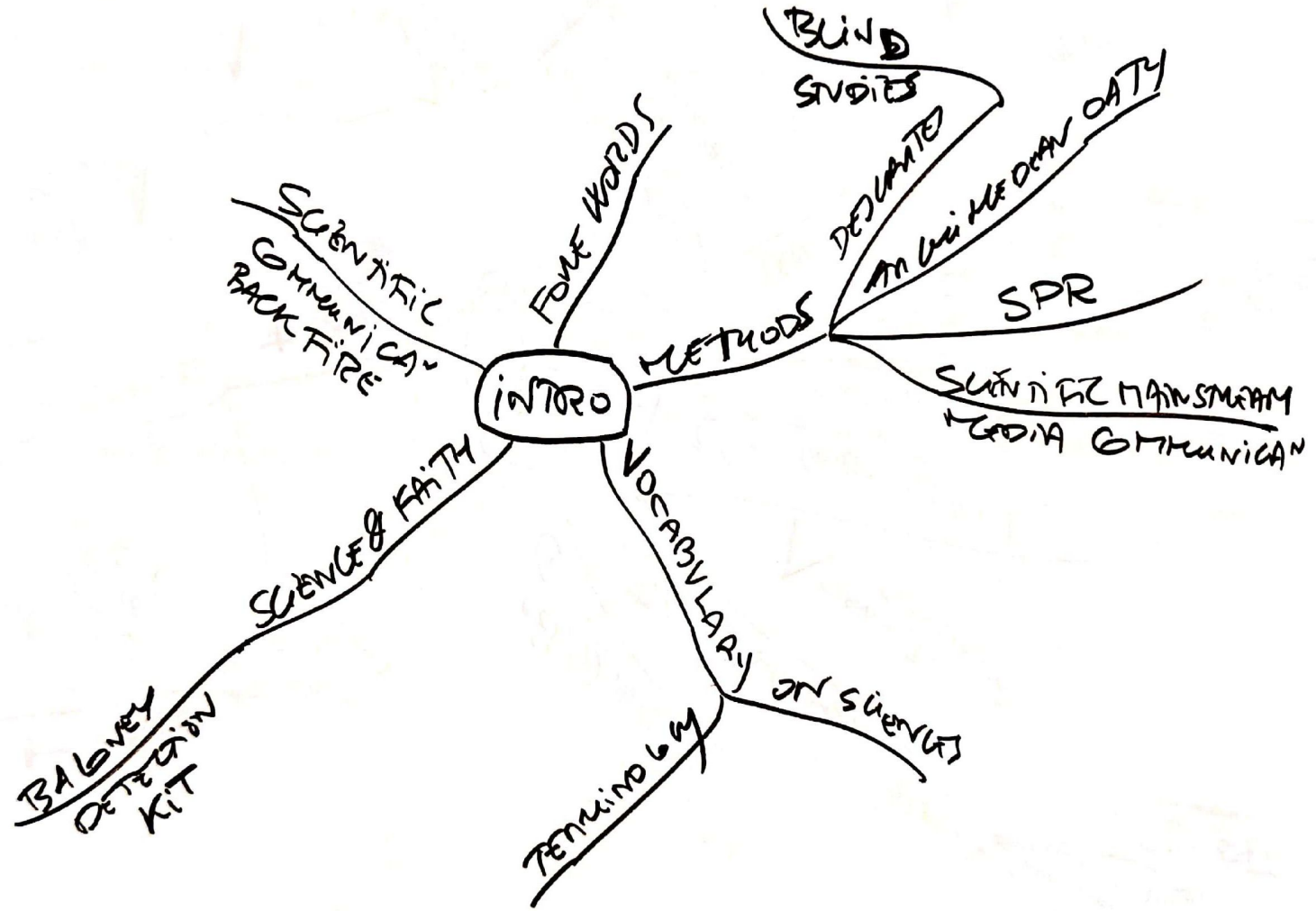
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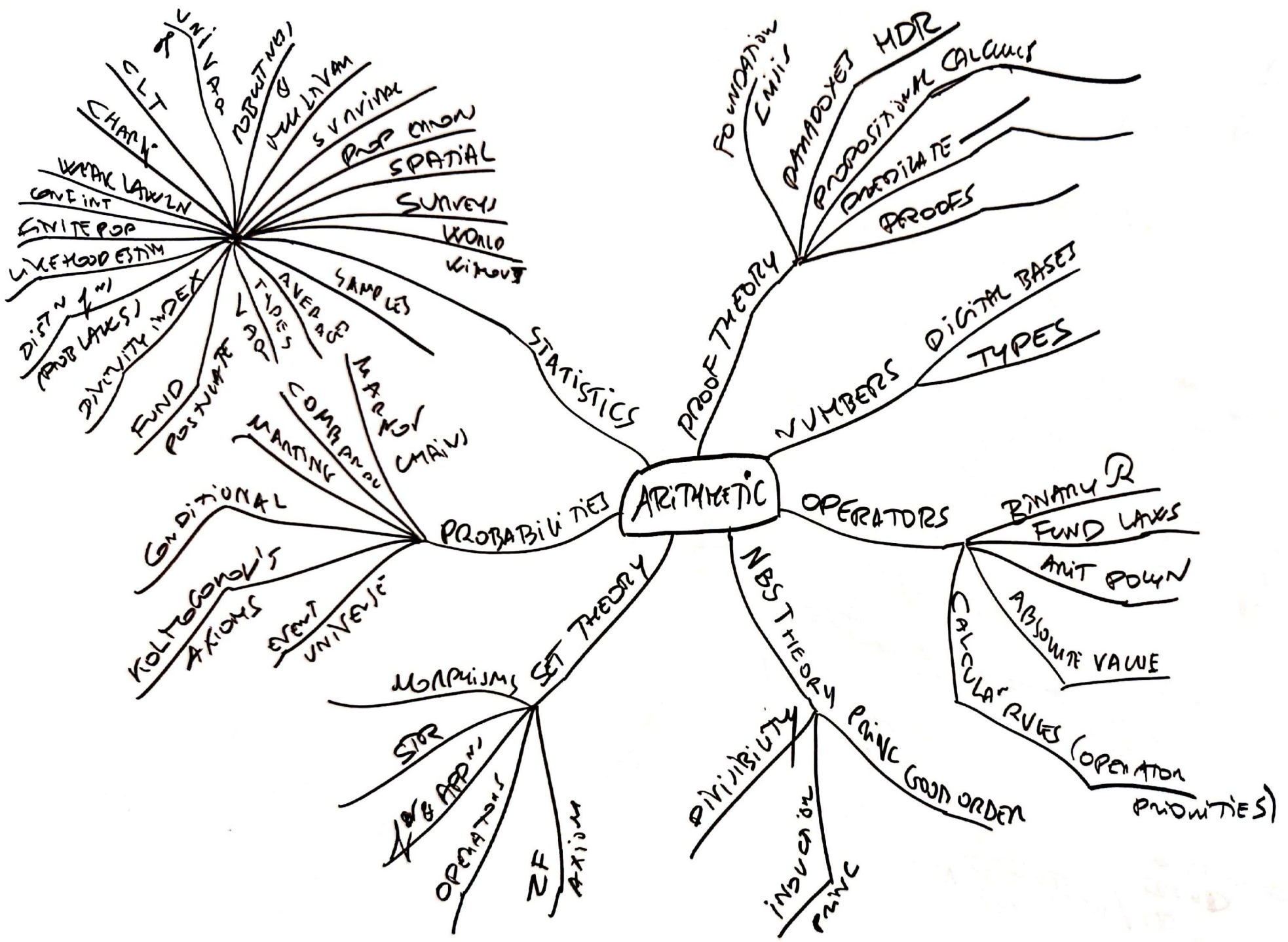
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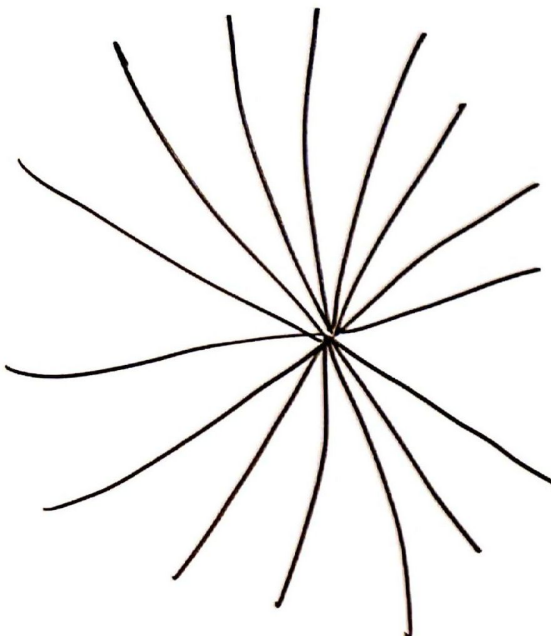
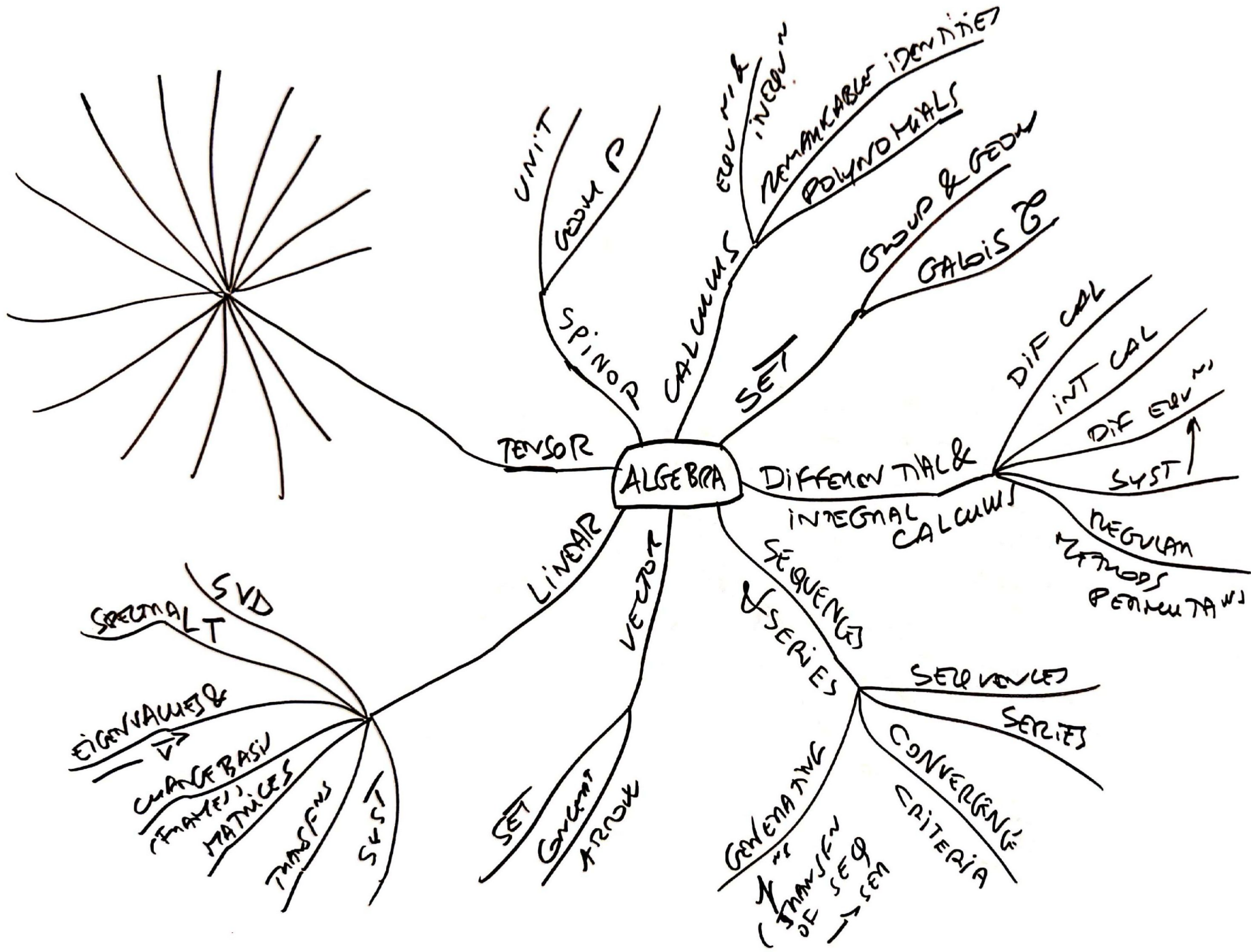


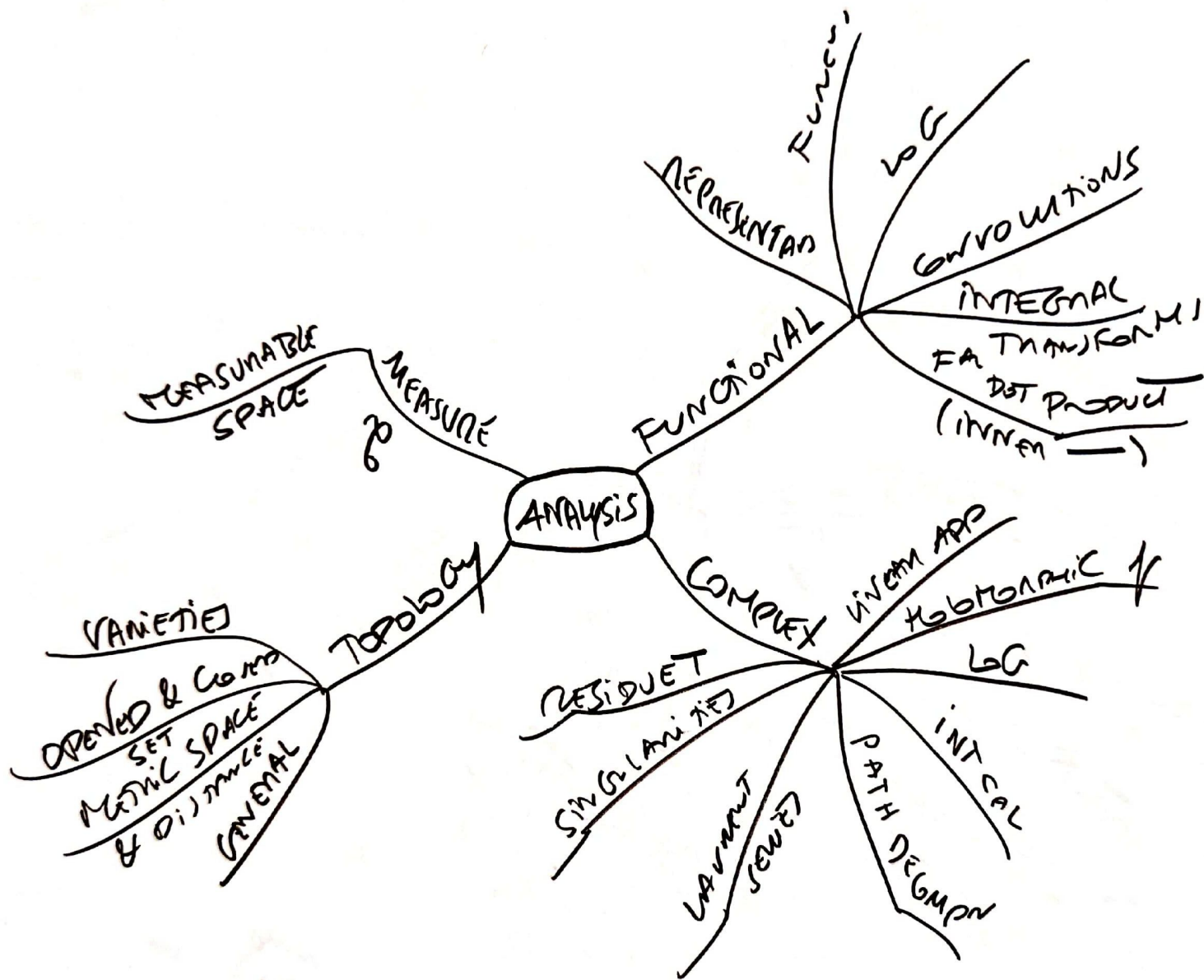


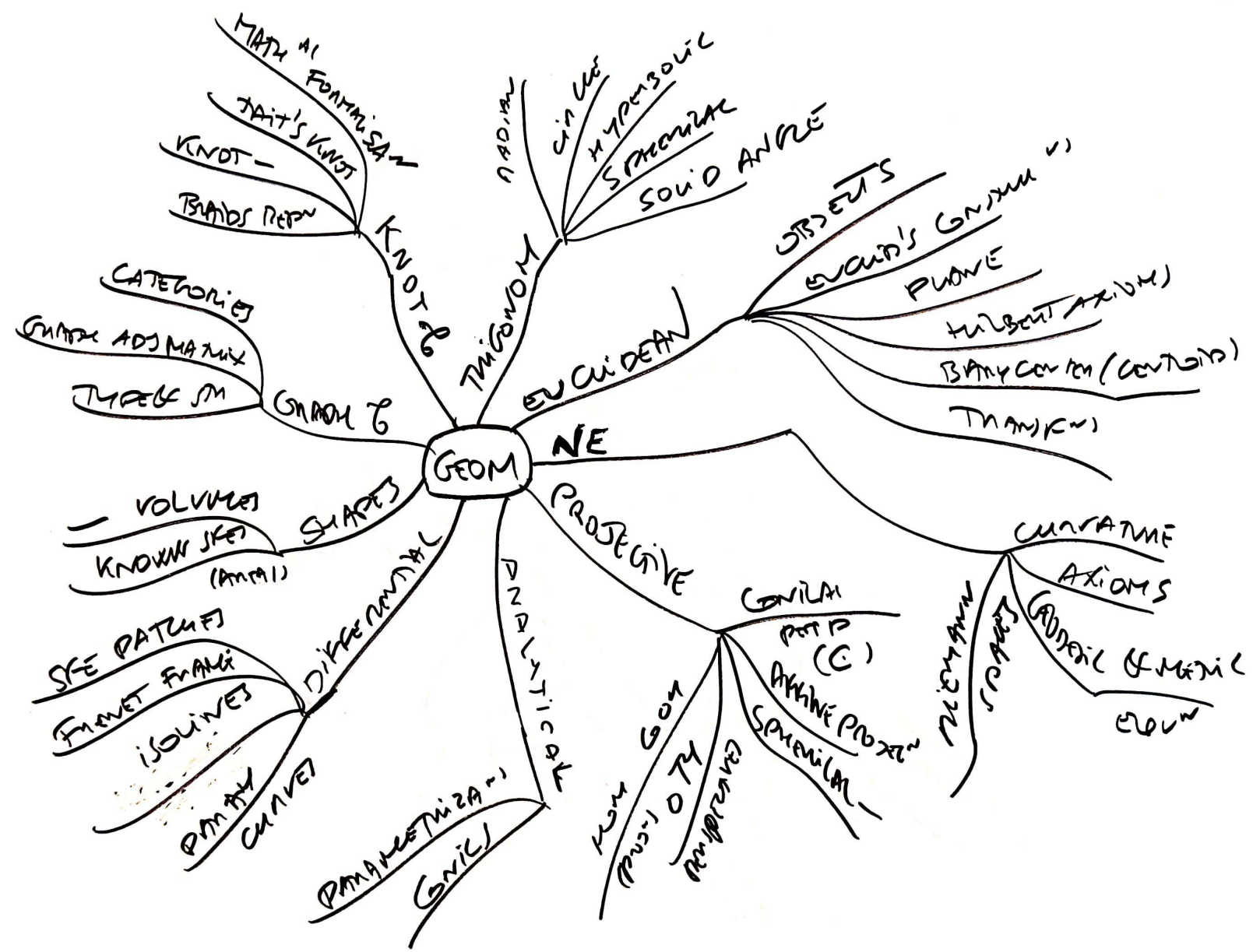
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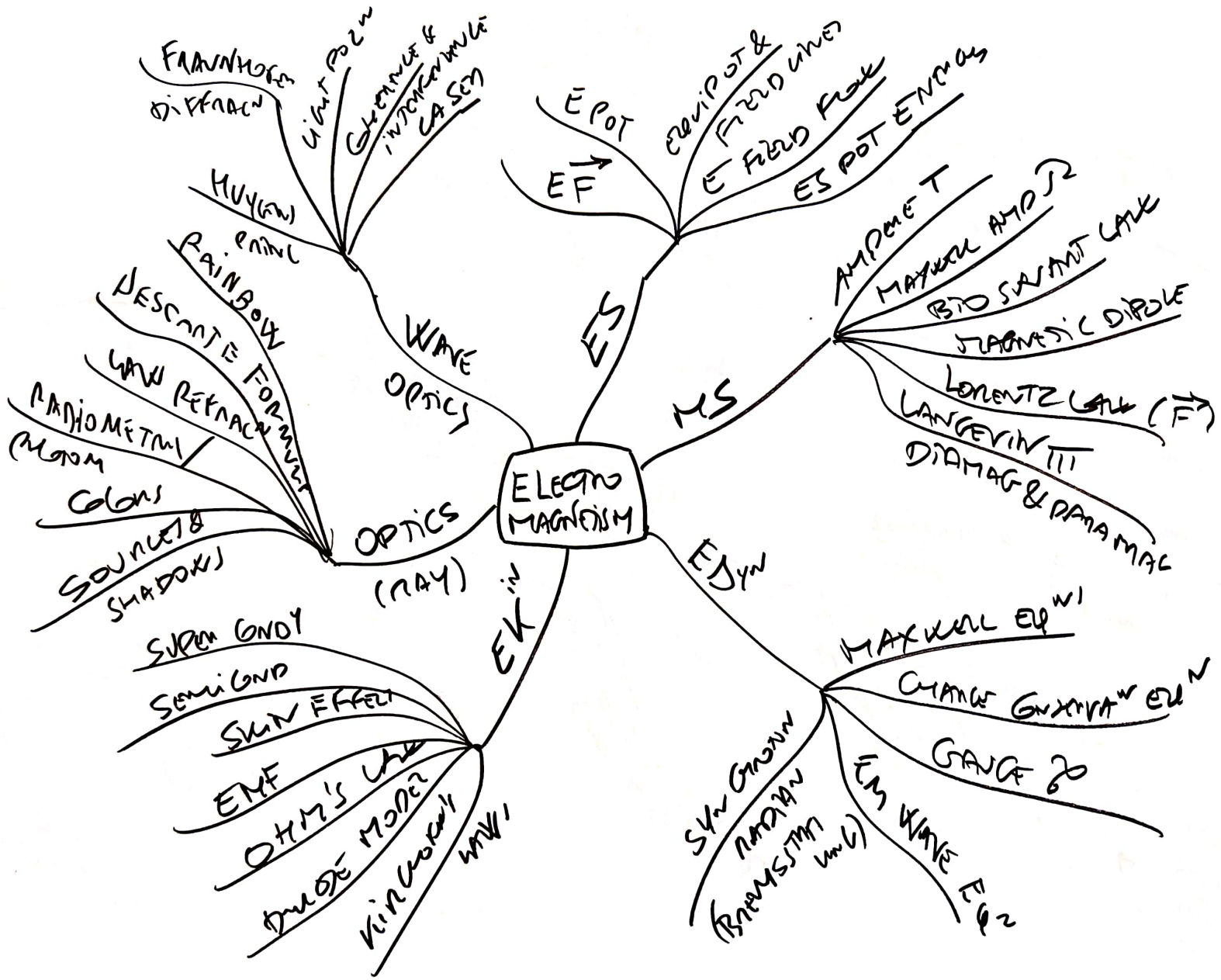


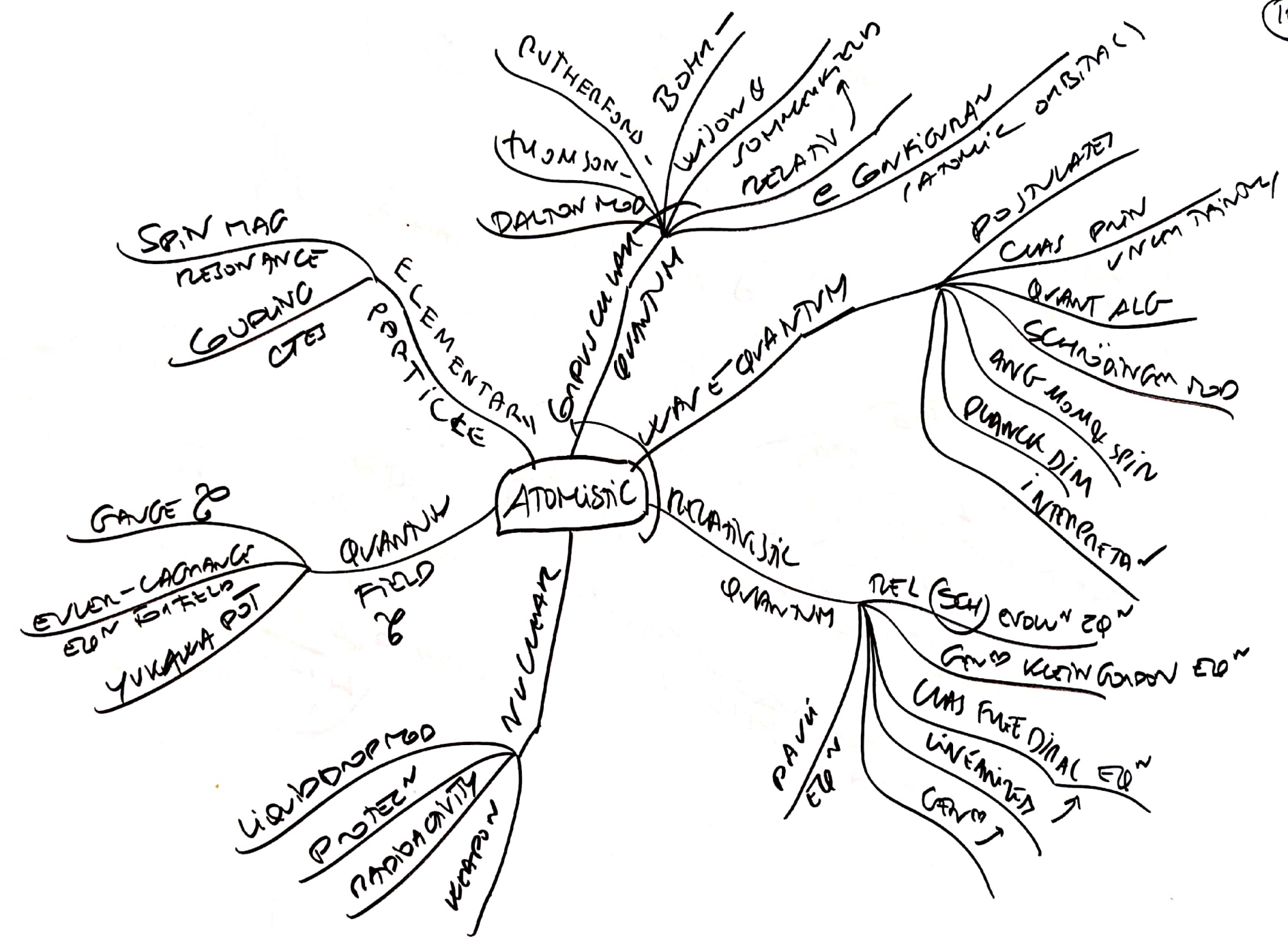


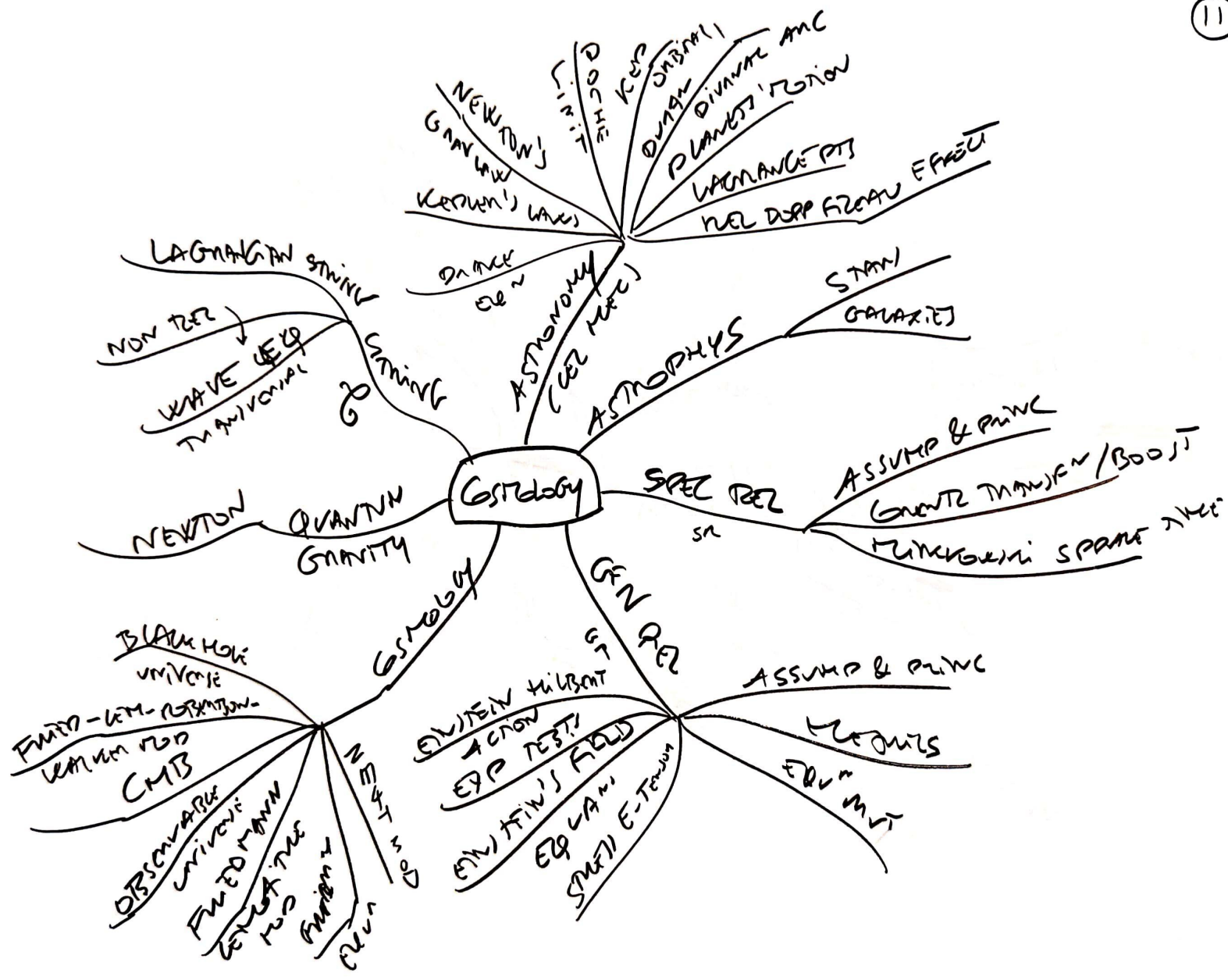


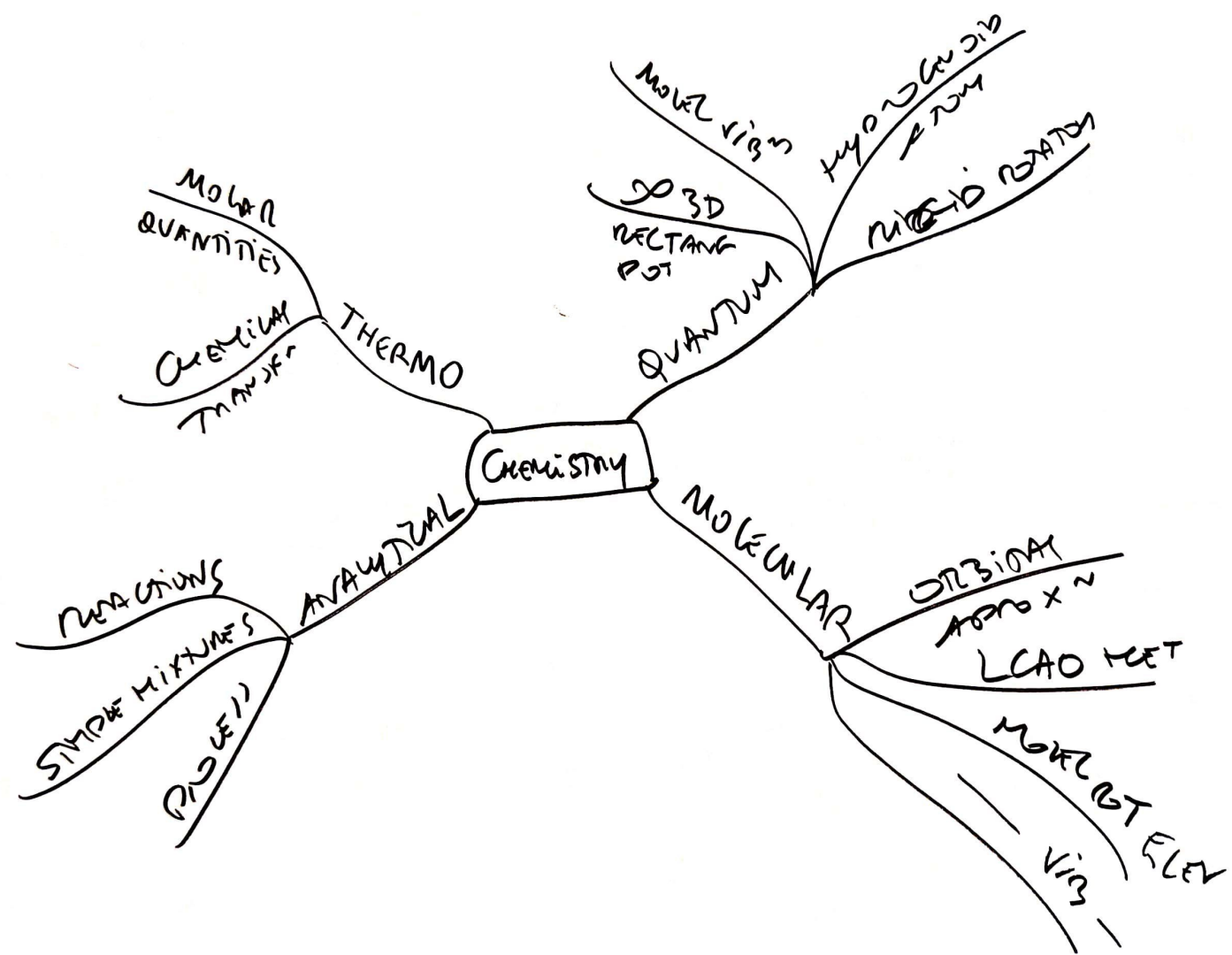


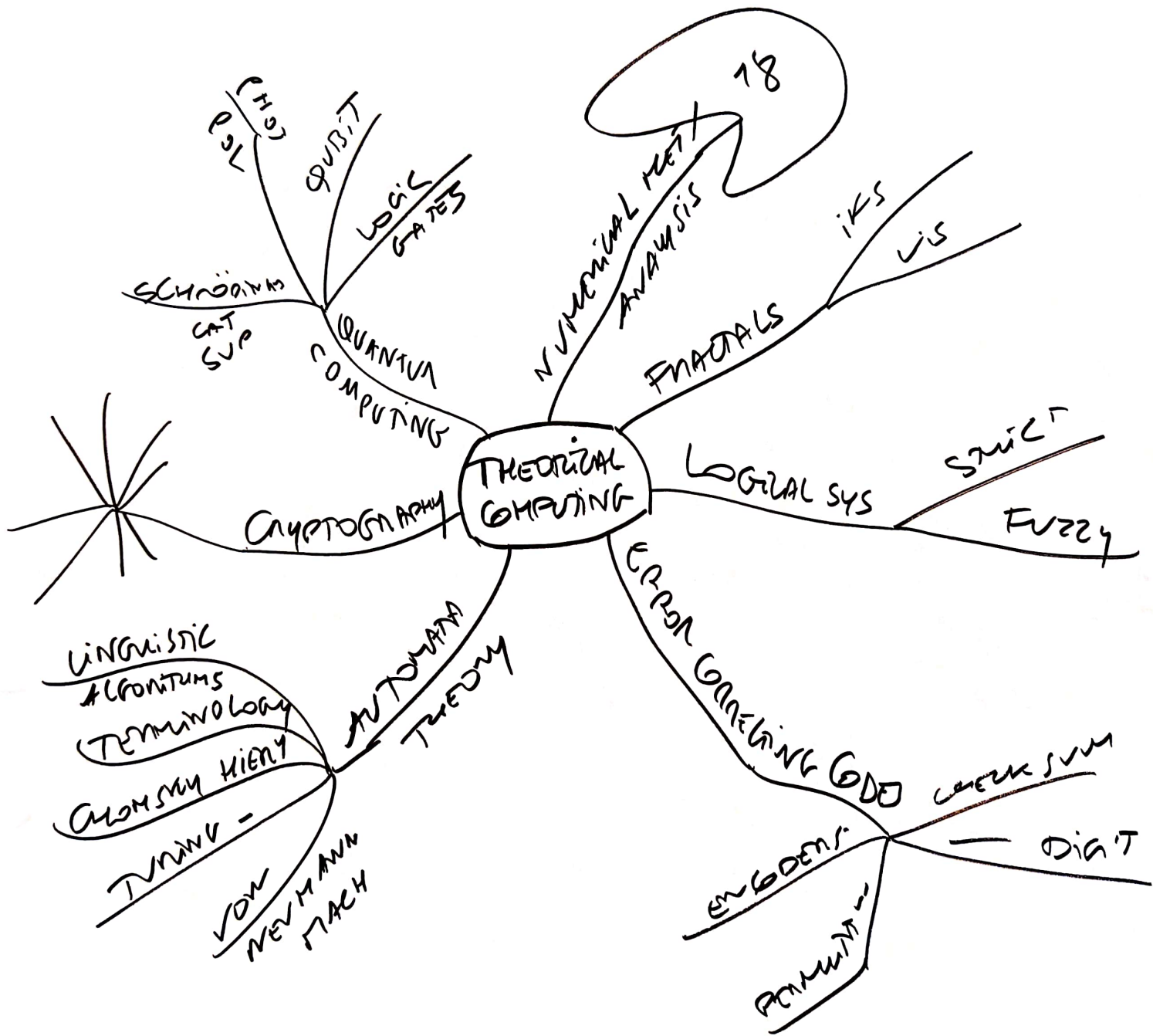


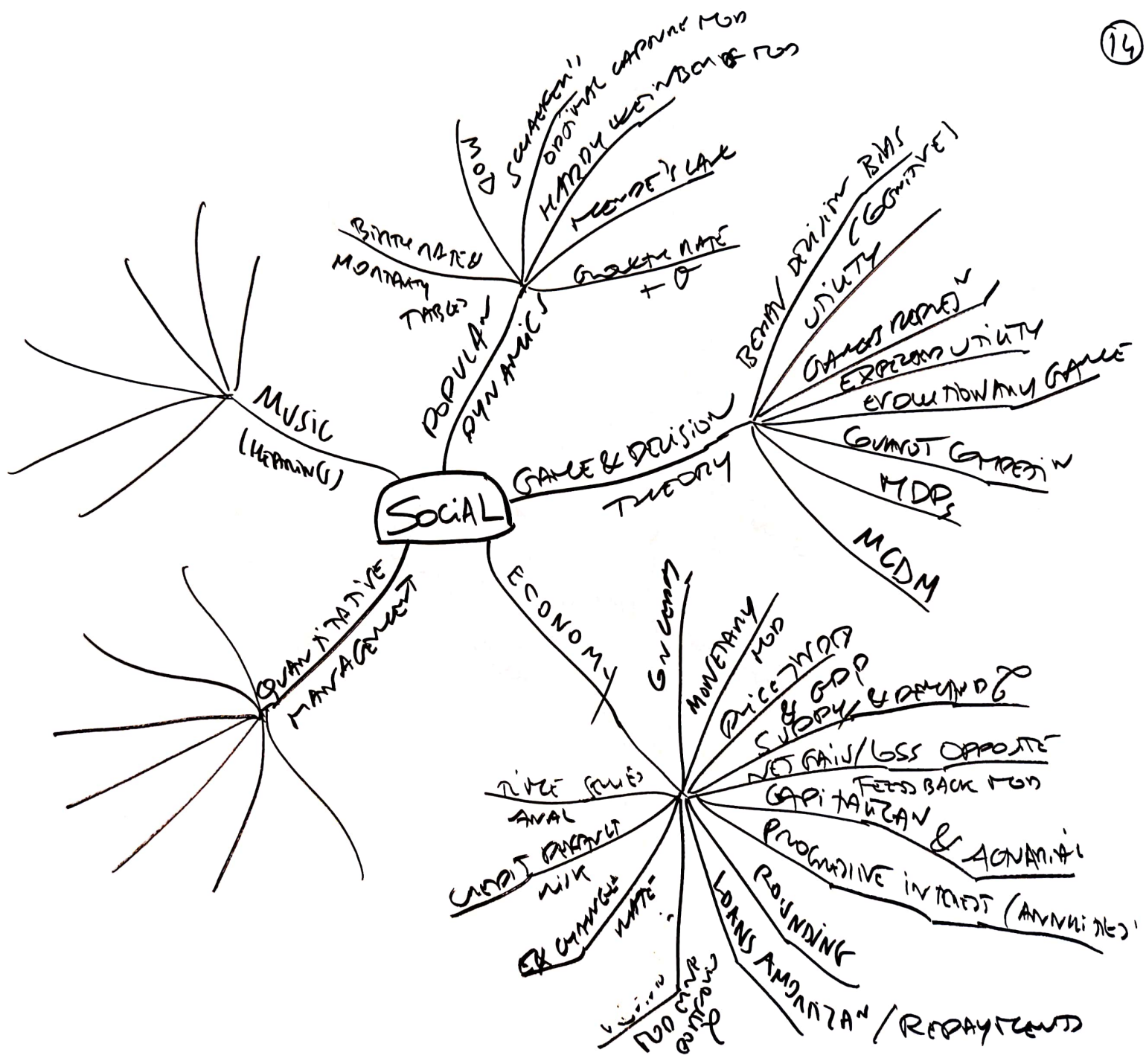


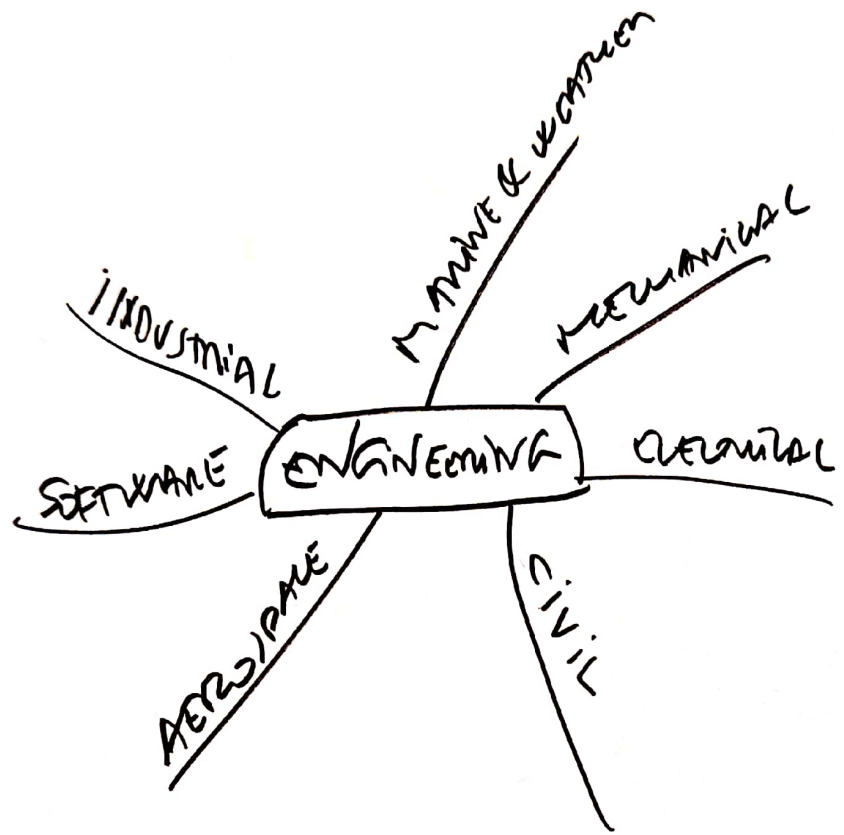




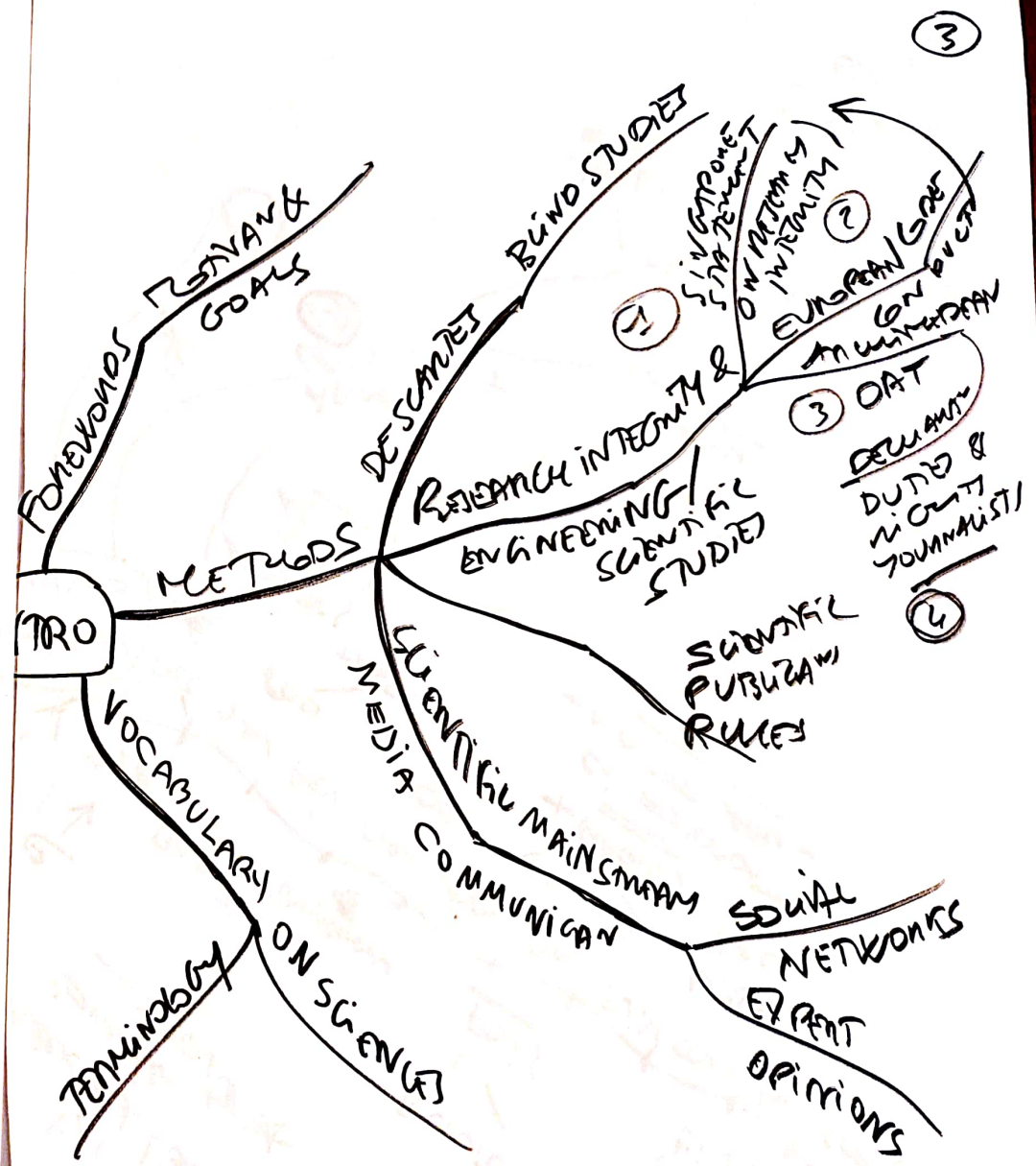




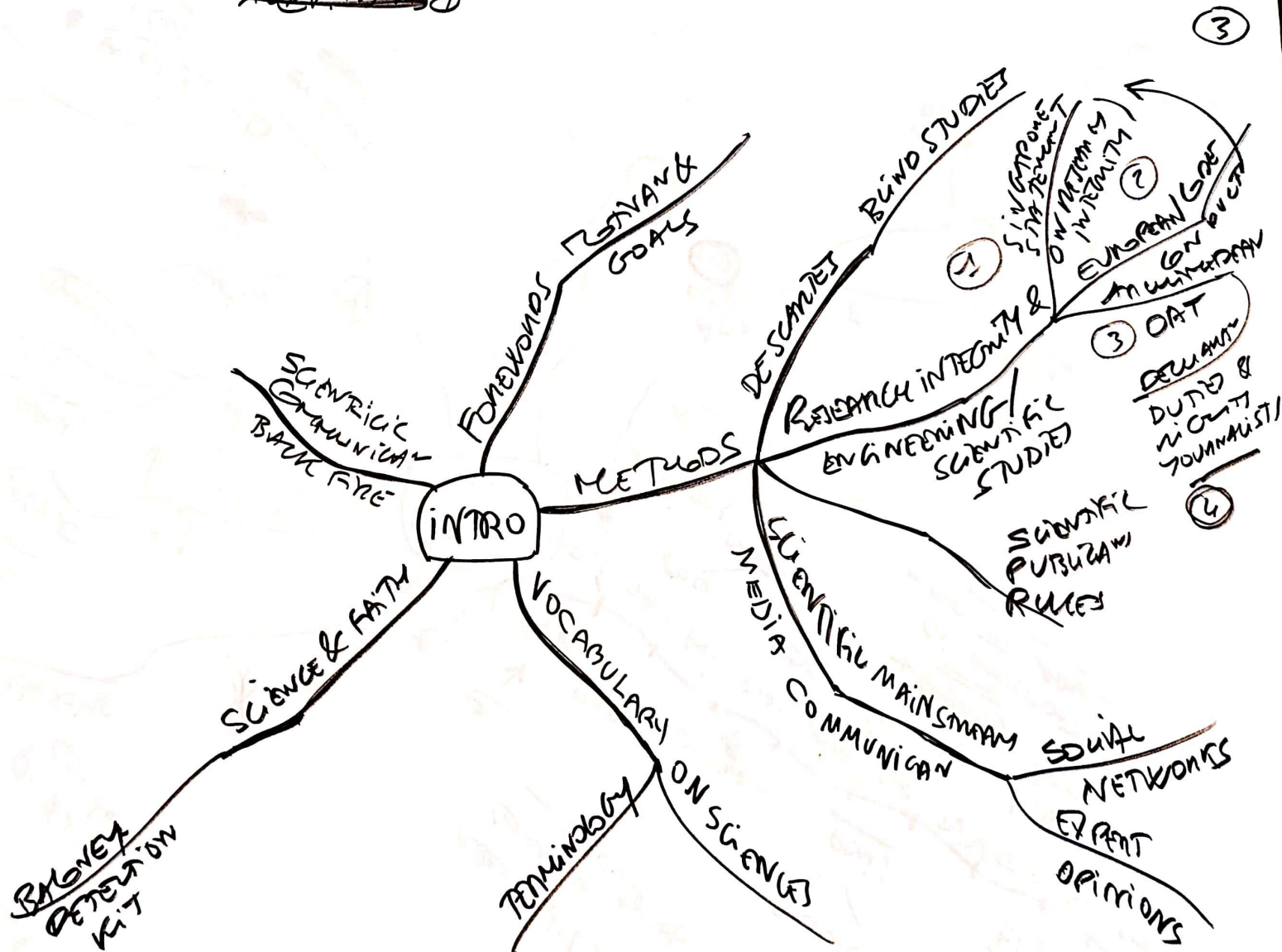


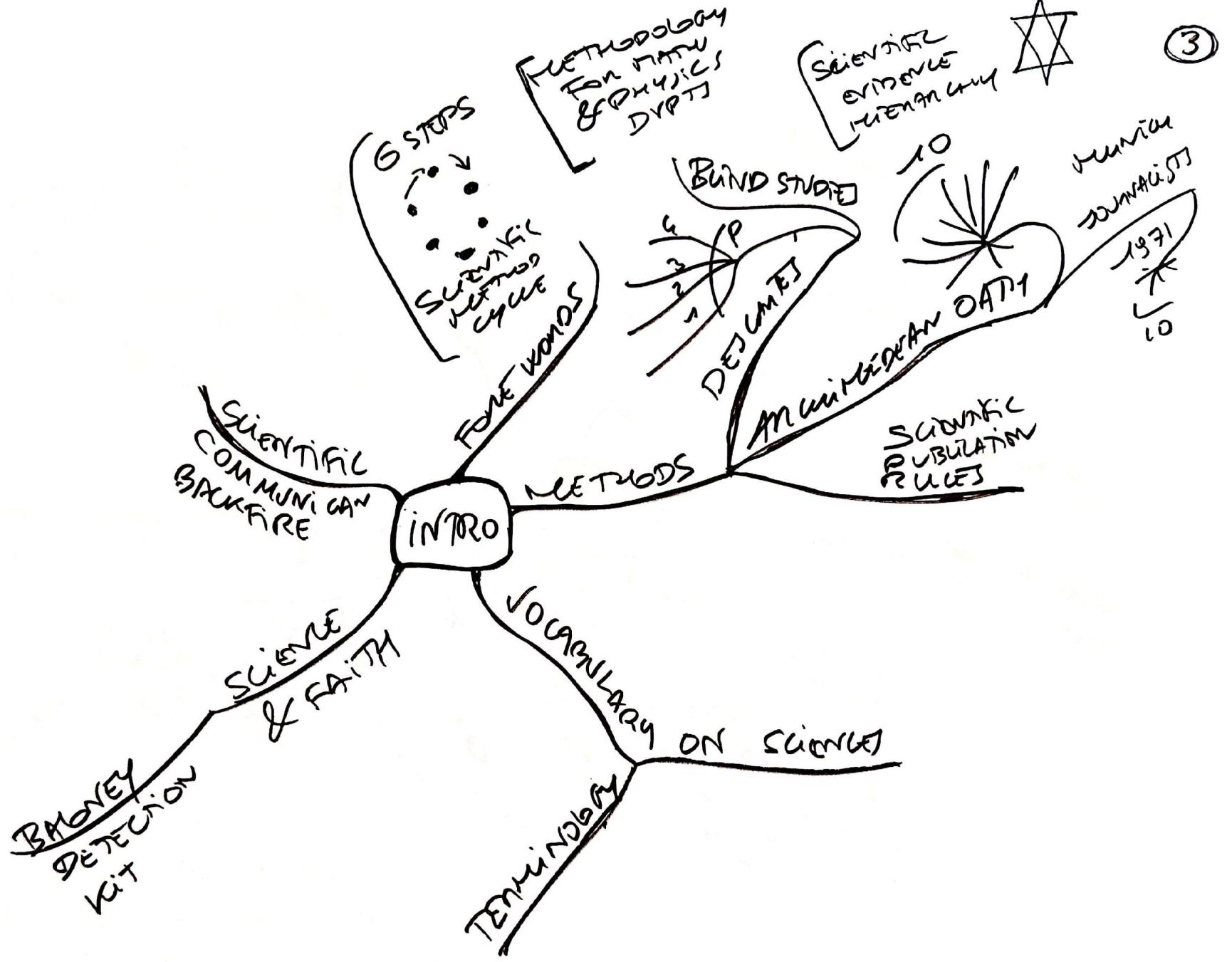


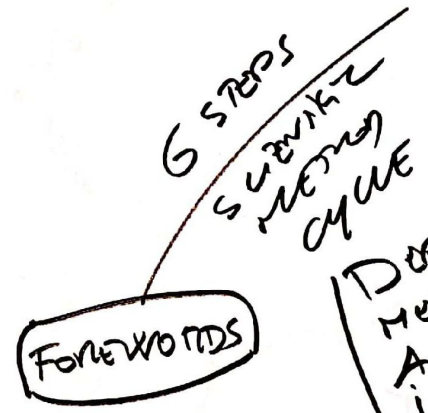
1 INTRO



~~July 10/15~~







DEFINE
MEASURE
ANALYSE
IMPROVE
CONTROL

6 DVPI

5 PUBLISH

4 DATA
COVER
ANALYSIS
- STAT & TIME

1 QUESTION
&
LITERATURE

2 TESTABLE
HYPOTHESES
- OPERATIONAL
DEFINITION

3 RESEARCH
DESIGN

METHODS

WHAT DO WE HAVE?

WHOSE WILL WE GO?

WHAT IS OUR GOAL?

WHAT IS FIT DATA?

MATHEMATICS

① Expose formally or in common language "Hypo" "Conjecture" "Property" to more demoted $H_1 H_2$ $C_1 C_2$ $P_1 P_2$

② Def "Axioms" now dem in step & now contradictory → starting points & establish restrictions on axpts $A_1 A_2$ in Same vein, mathematicians def spec or voc related to math operators $O_1 O_2$

③ Once A_1 laid, pull directly "Lemmas" or "Properties" whose validity follows ax & previous axpt T supposed to validate departure H or C L_1

④ Once $T_1 \dots$ proved conclude on "Consequence" $C_1 \dots$ & even $P_1 \dots$

⑤ Test Strength (robustness) or usefulness of Conv or H by proving reciprocal T or by comparing them with other set of math well known to be true & prove together a clear coherent str $(E_1 E_2)$

⑥ Possible Proof may be shown in hier γ str as order $R_1 R_2$

PHYSICS

— correctly in a formally or common lang all at details of pts to solve Problems $P_1 \dots$

② Def (on state) "Postulates" or "Principles" or "Hypotheses" & "Assumptions" (supposedly that we give st & establish Postuⁿ) on axpts (typically P_1 trying to avoid confusion notation between postulates & principles)

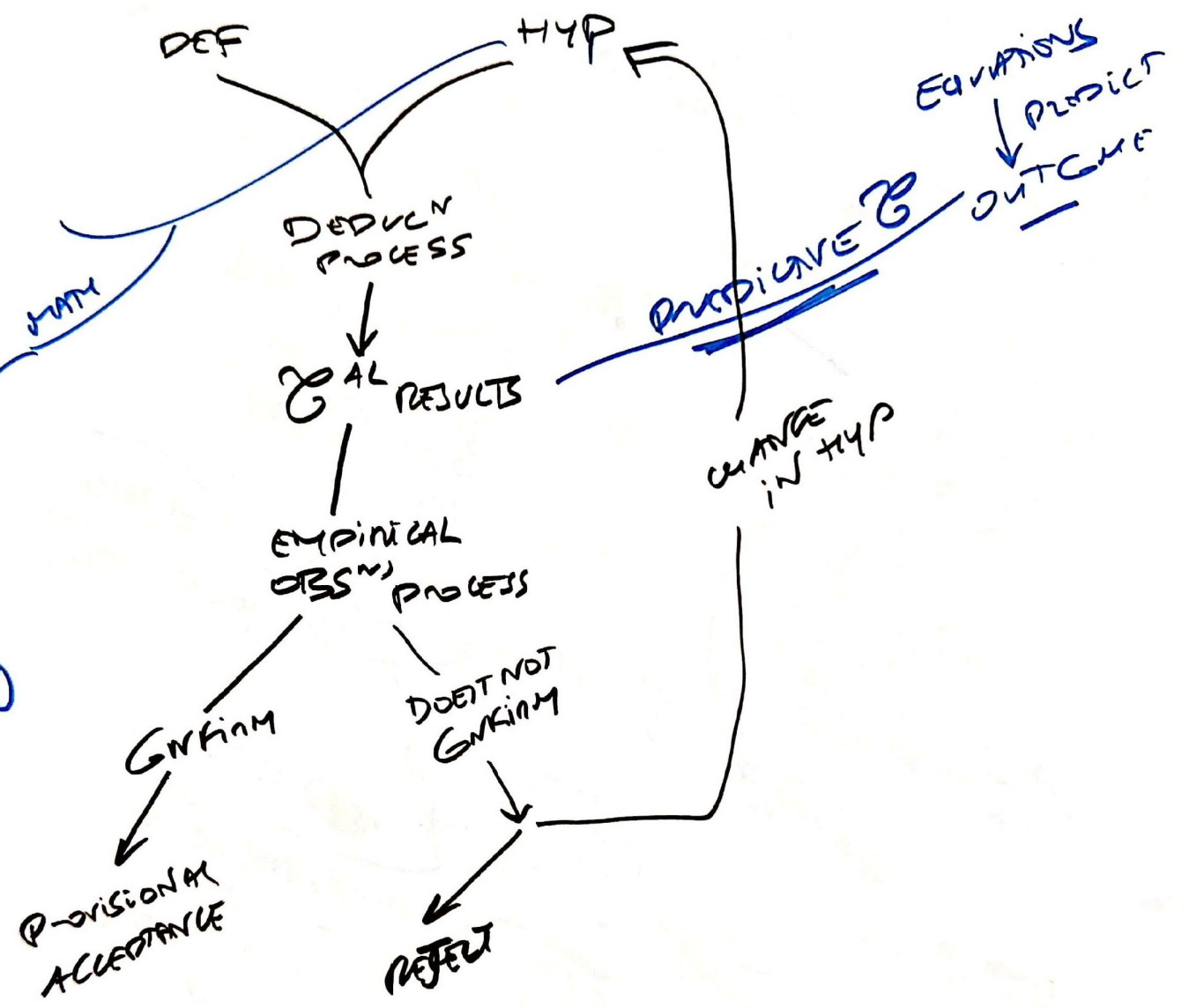
③ One to n mod ~~developed~~ check eqn's units for possible errors in axpts $V A_1 \dots V A_2$

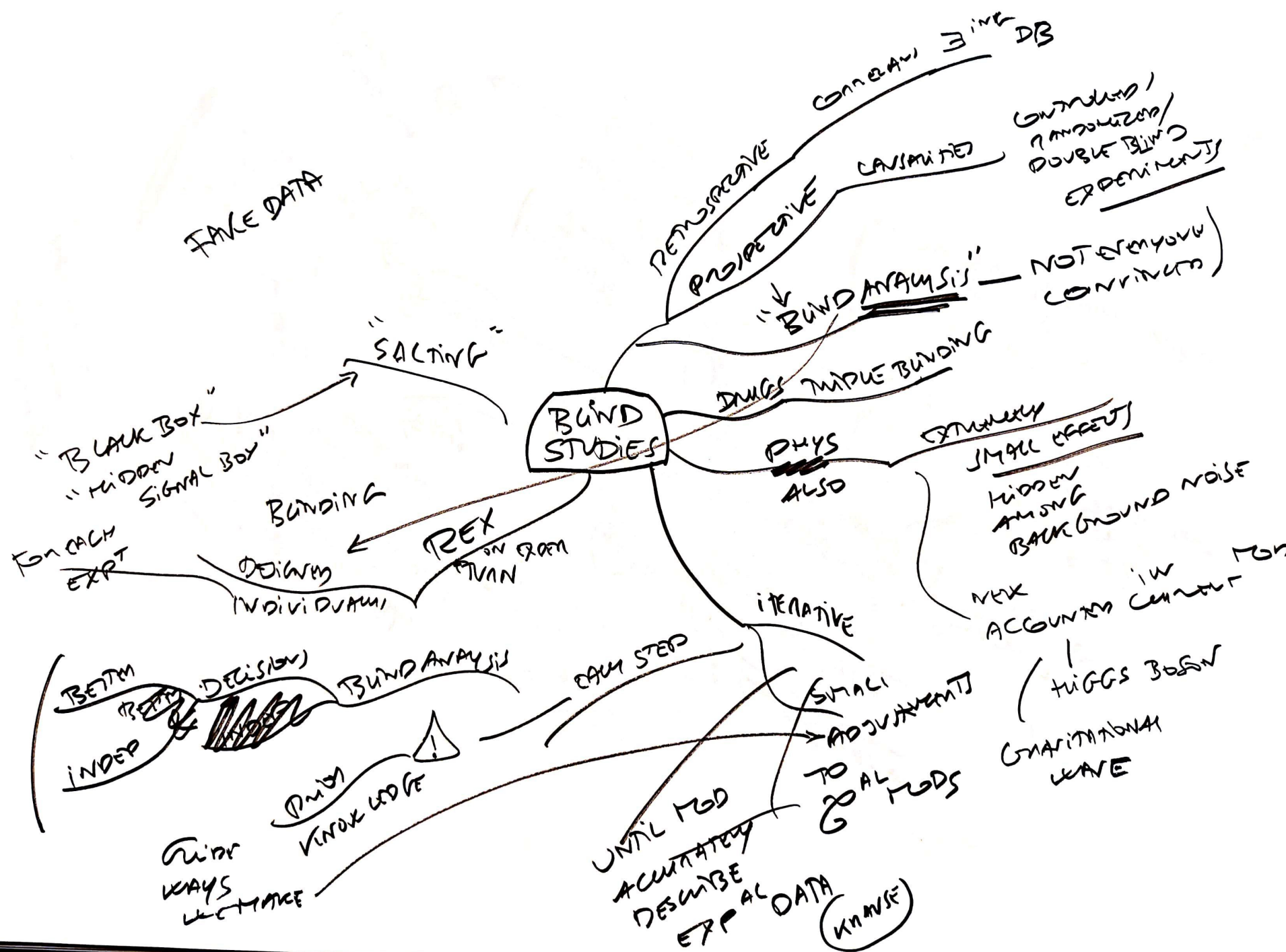
④ Search for borderline cases (including "in equalities") of mod to verify validity individually get $C_1 \dots$

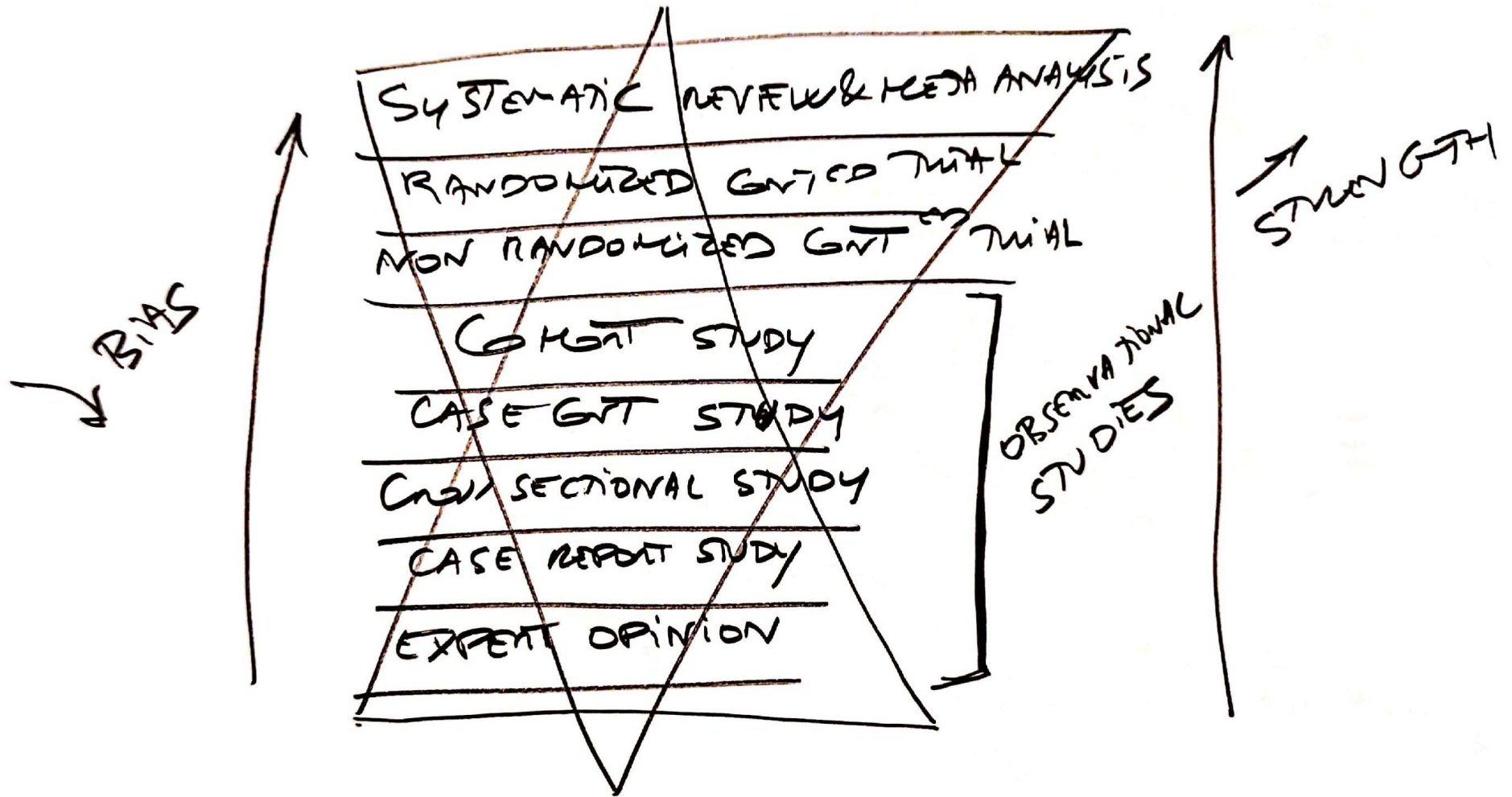
⑤ Exp γ test γ mod observed & submit work to compare with other indep research teams. Next mod should provide expⁿ results & never observed if mod is valid what then "official status of γ "

⑥ Possibly Proof may be shown in hier γ str as order R_1

- Not a proof of an external seeking truth but target of existing
- What should be correct is just the reasoning



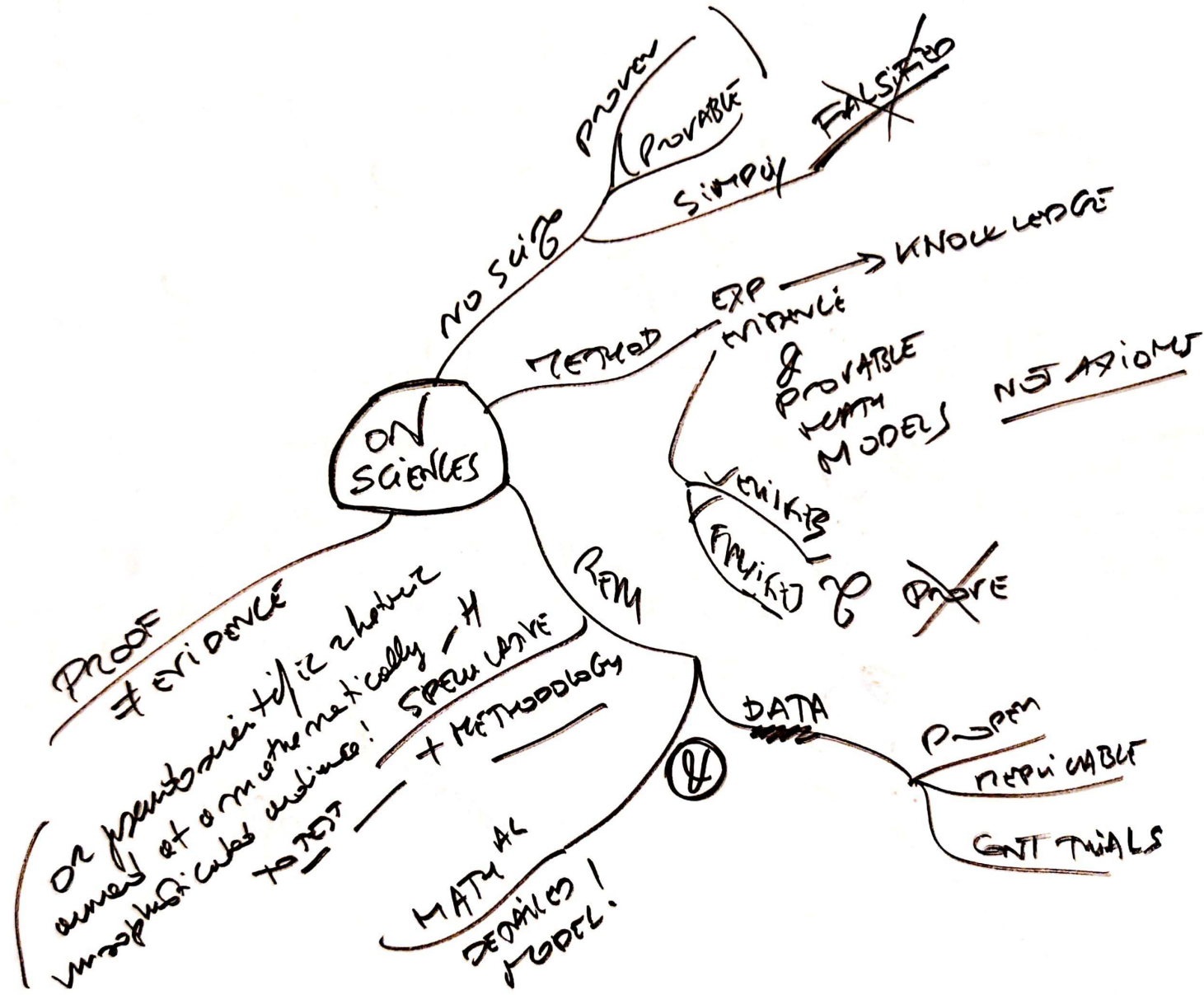


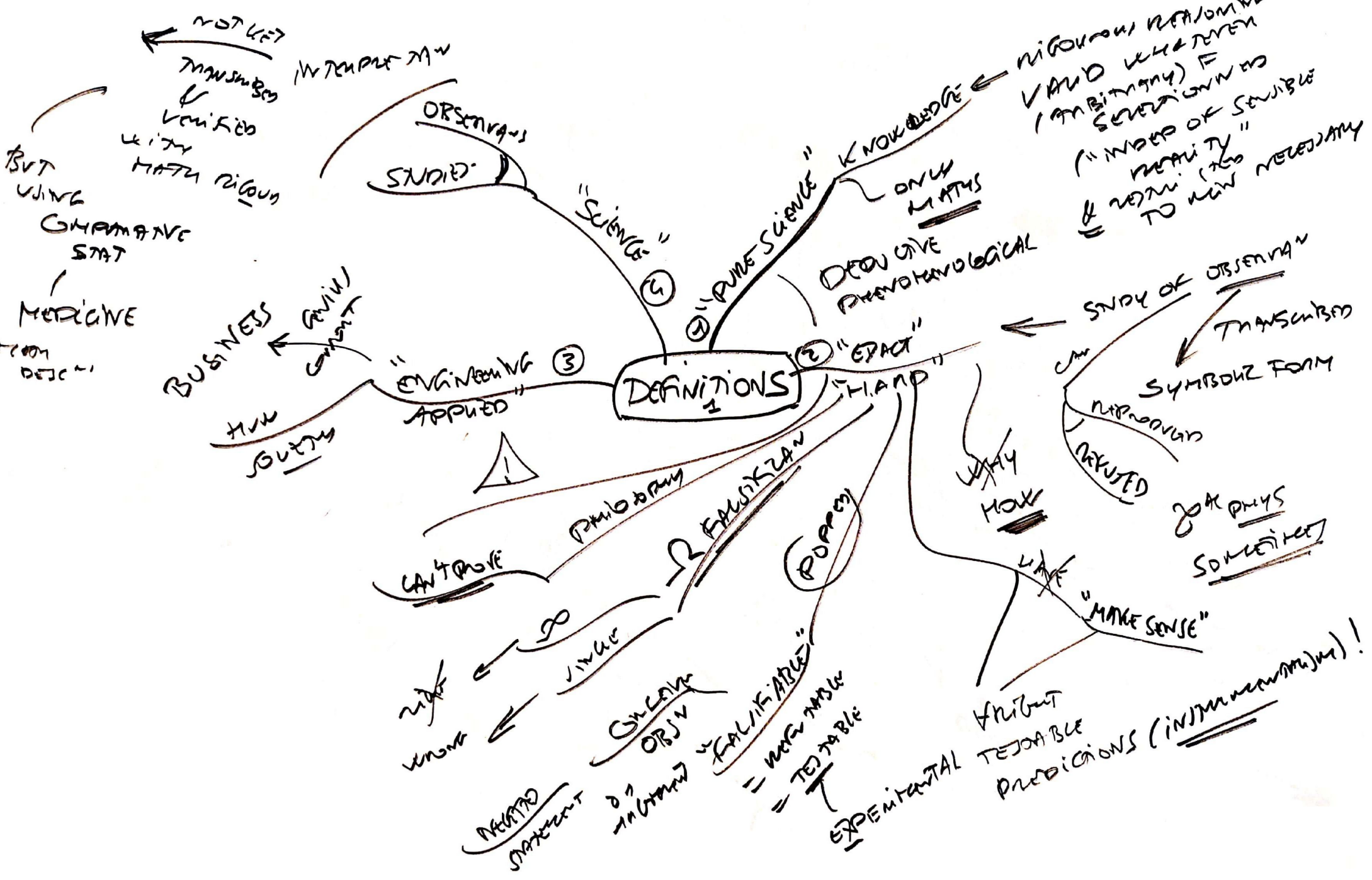


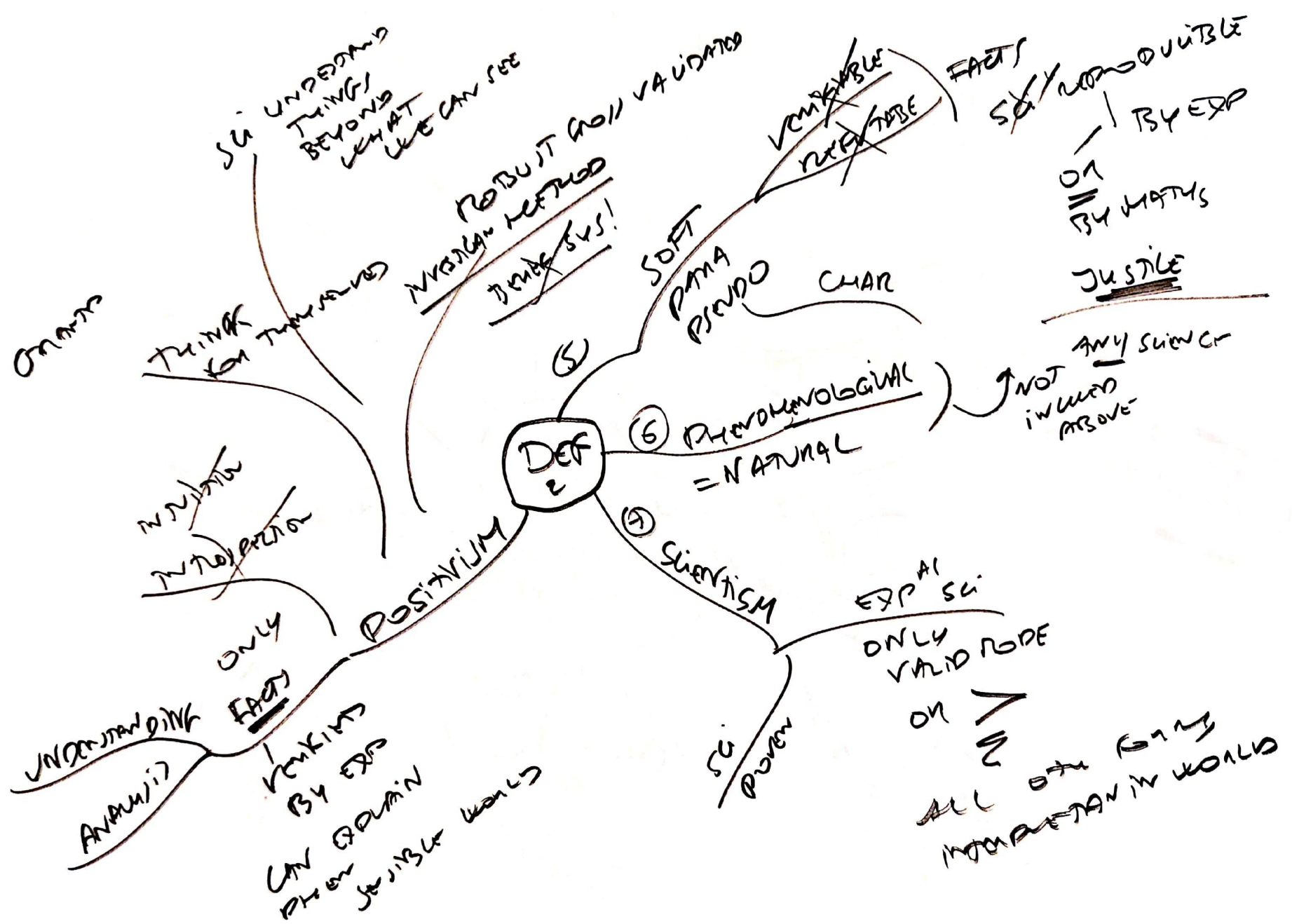
SCIENTIFIC EVIDENCE HIERARCHY

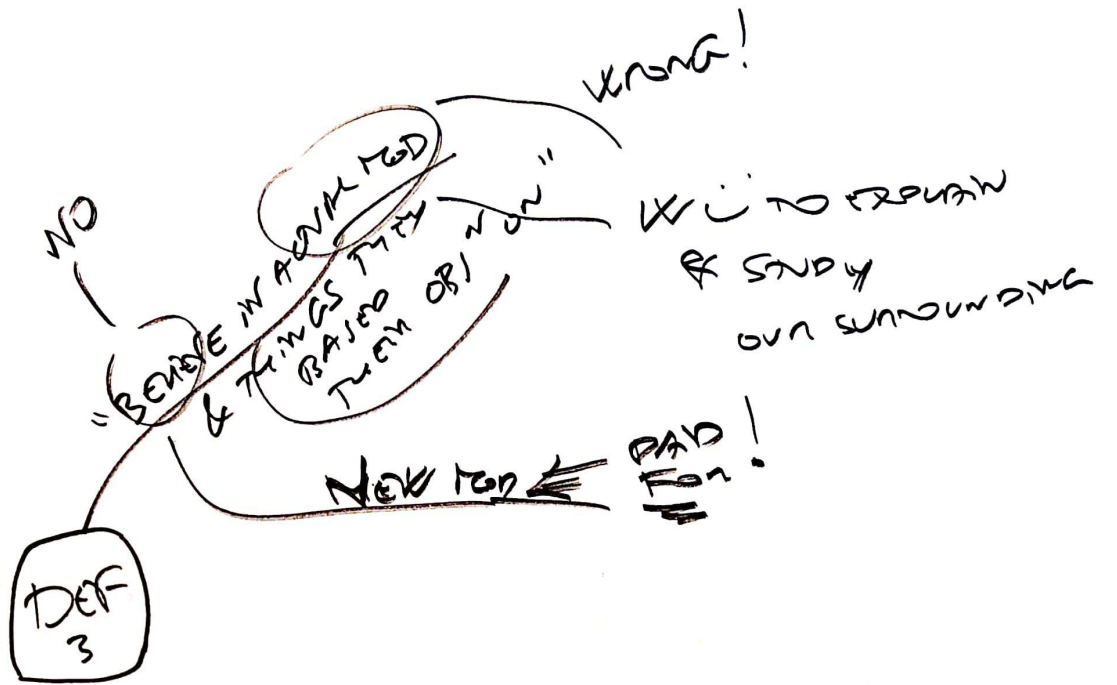
VOCABULARY

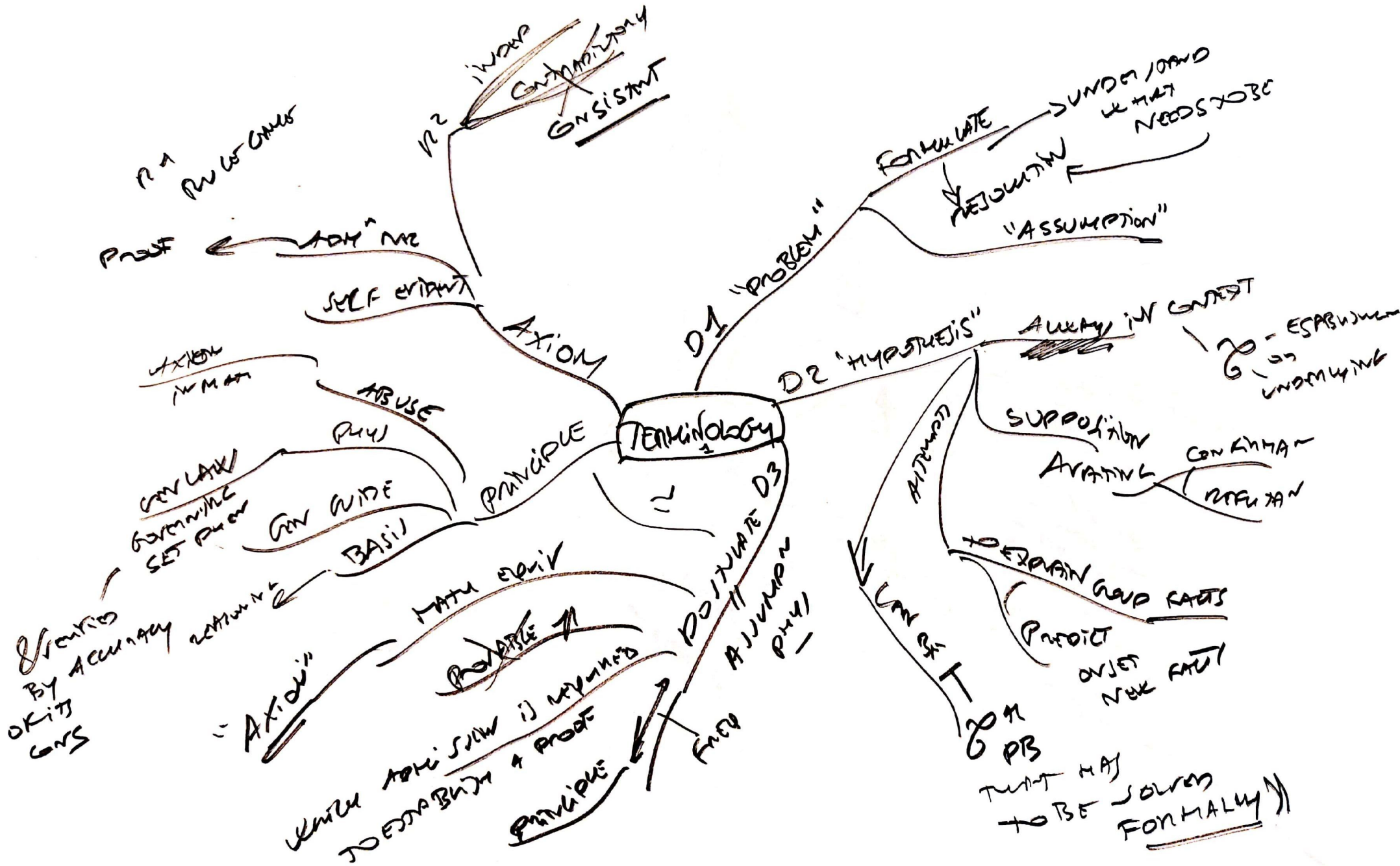
QUESTION
NEEDING
SUFFICIENT









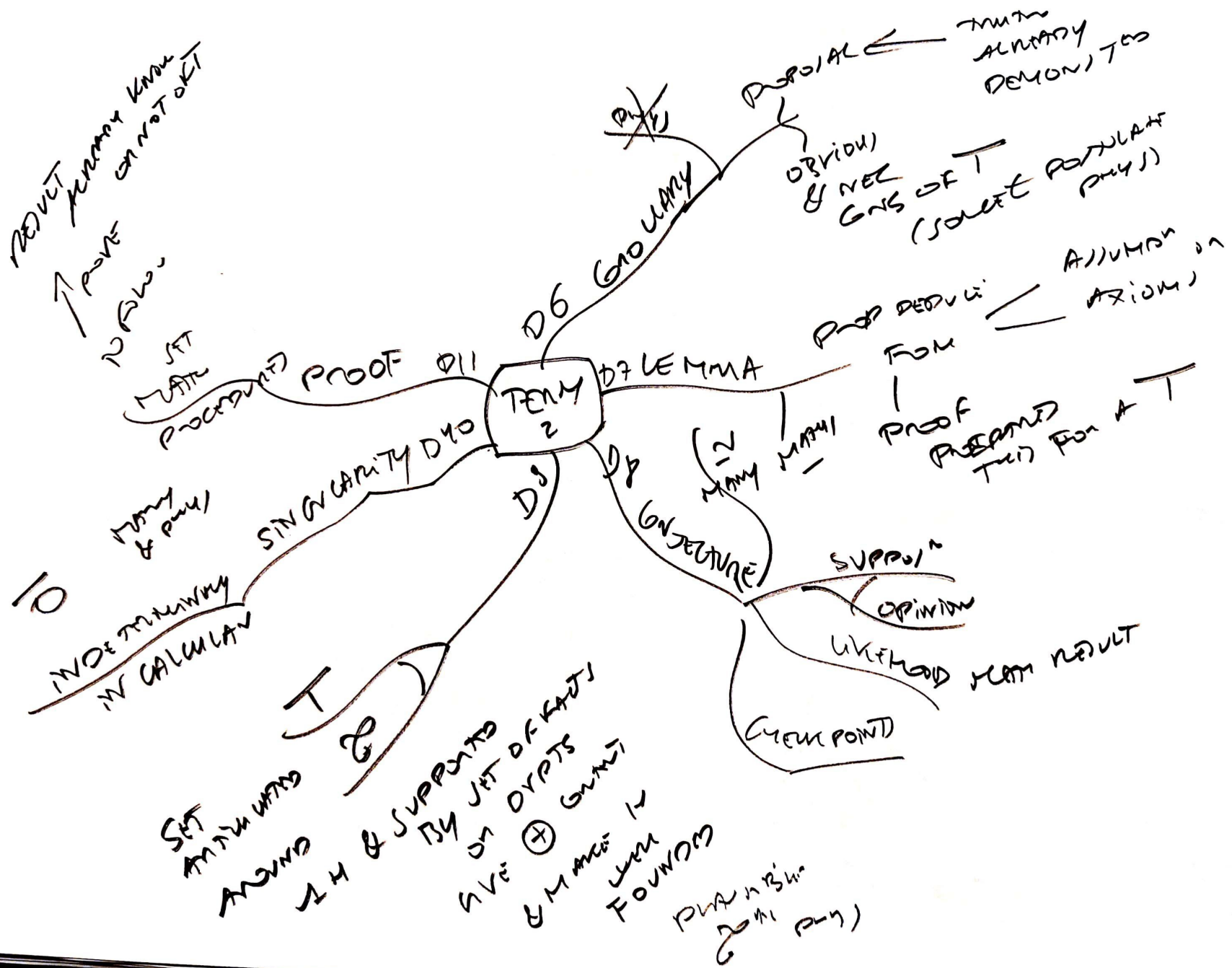


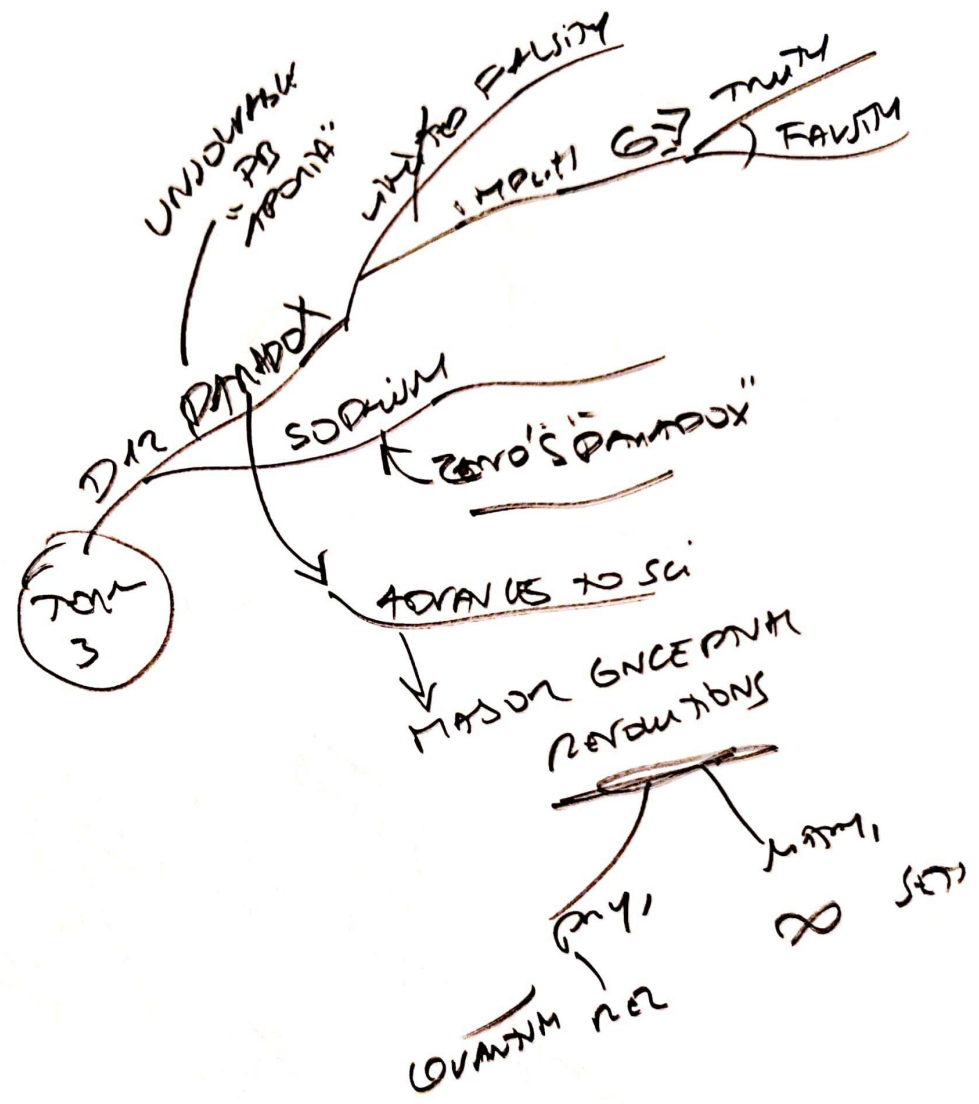
Created by accuracy
OF IT
GNS

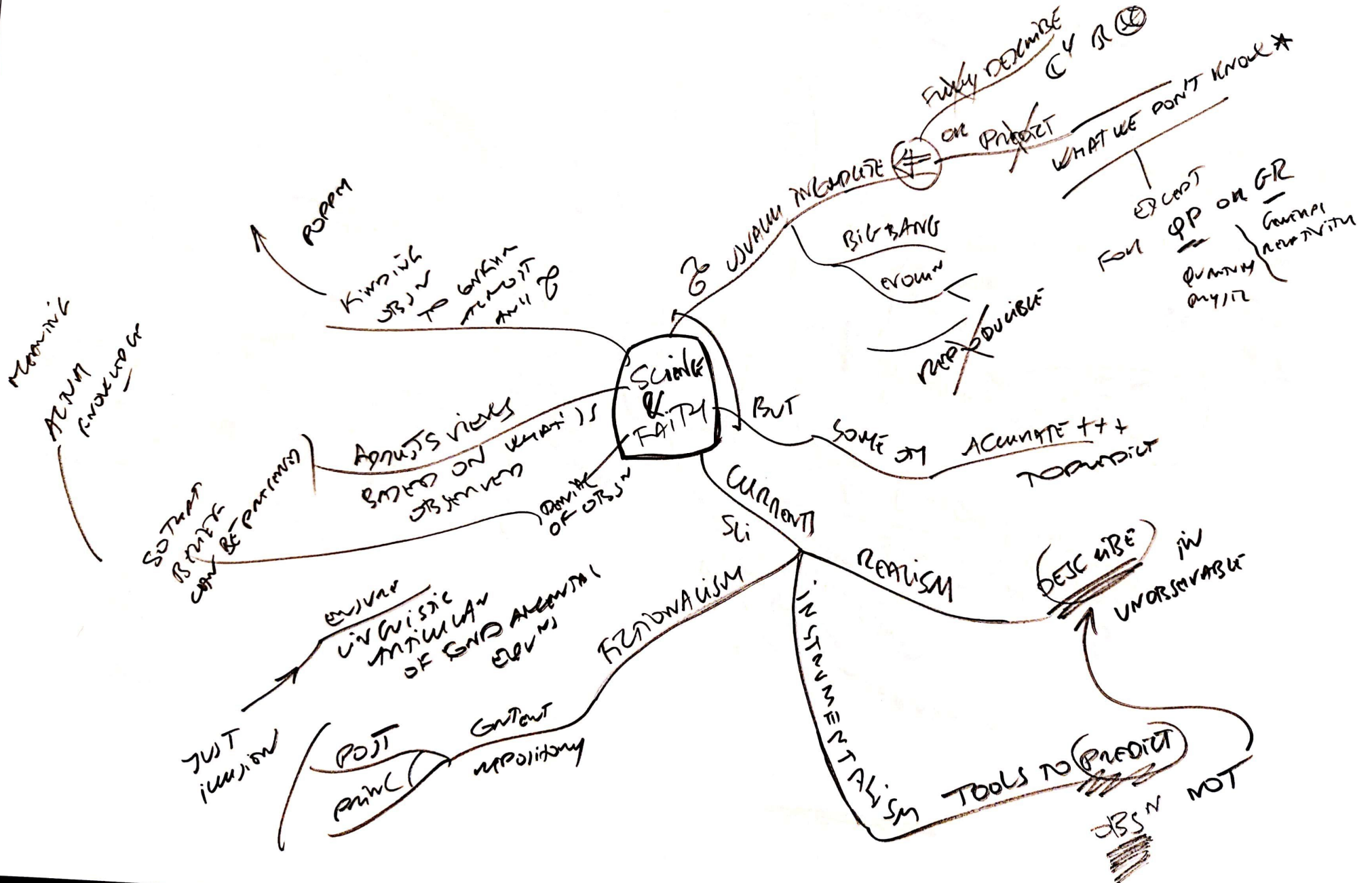
"AXIOM"

PHI

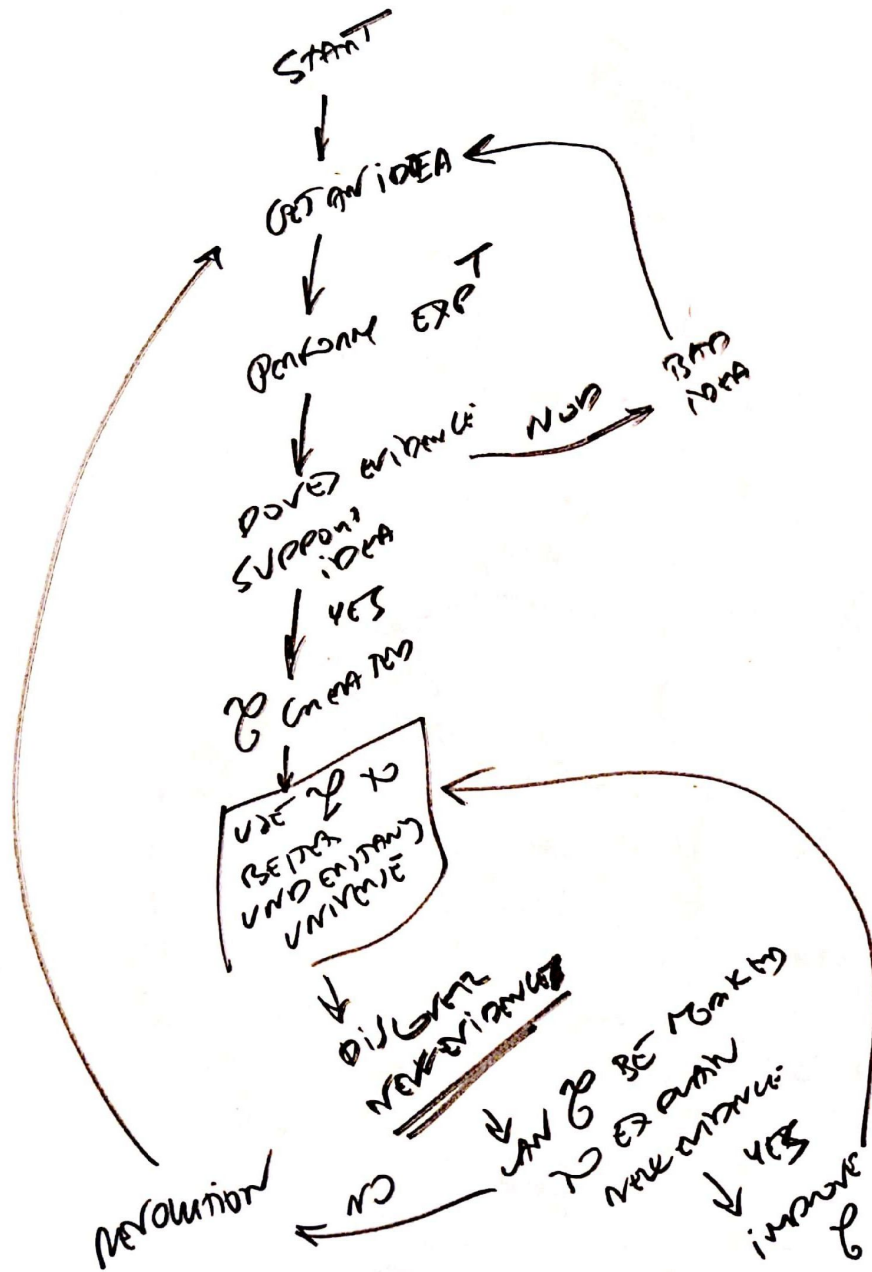
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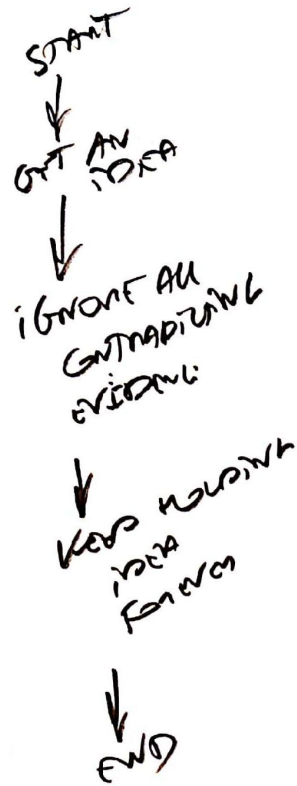




SCIENTIFIC METHOD



TRUTH BASED METHODOLOGY



**DAVENEY
CRITERION
KIT**

(SAGAN)

1) Is the claimant's personal beliefs & ideas "or" some like reason?
2) If the claimant professes a new explanation, does it account for as many phenomena as the old explanation did?

3) How Reliable is the source of claim?
4) Does this source often make similar claims?

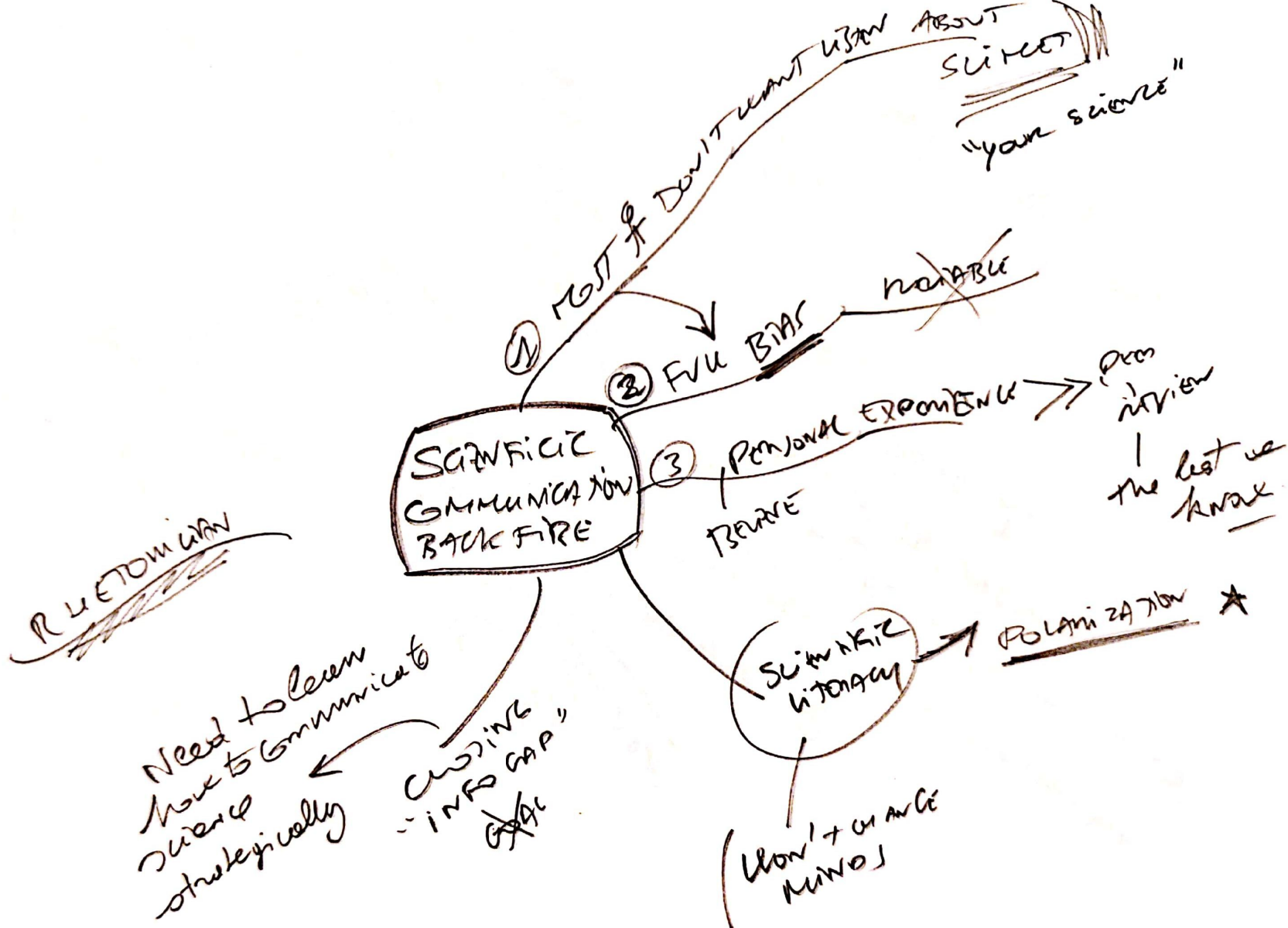
5) Have the claims been verified by independent source?

6) How does the claim fit what we know about how the world works?

7) Has anyone gone out merely to disprove the claim or have only supportive evidence been sought?

8) Is the claimant providing an explanation for the observed phenomena or merely denying the existing explanation?

9) Is the claimant employing the accepted rules of research and tools of research or have there been abandoned in favor of others that lead to the desired conclusion?
10) Does the preponderance of evidence point to the claimant's conclusion or to a different one?



RE-ETOM CAN

SCIENTIFIC COMMUNICATION BACKFIRE

① TEST & DON'T WANT US/AN ABOUT SCIENCE
"your science"

② FULL BIAS
~~NARRATIVE~~

③ PERSONAL EXPERIENCE
PERSONAL EXPERIENCE
THE BEST WE KNOW

Need to learn how to communicate science strategically

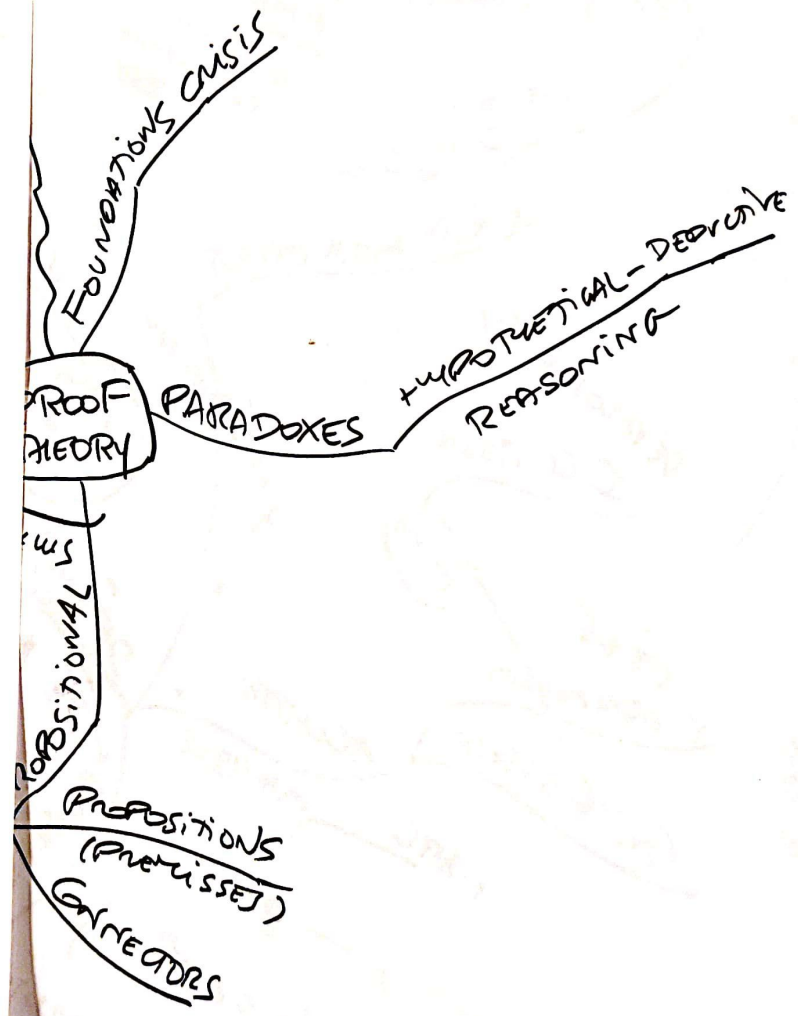
CLOSING INFO GAP

SCIENTIFIC LITERACY

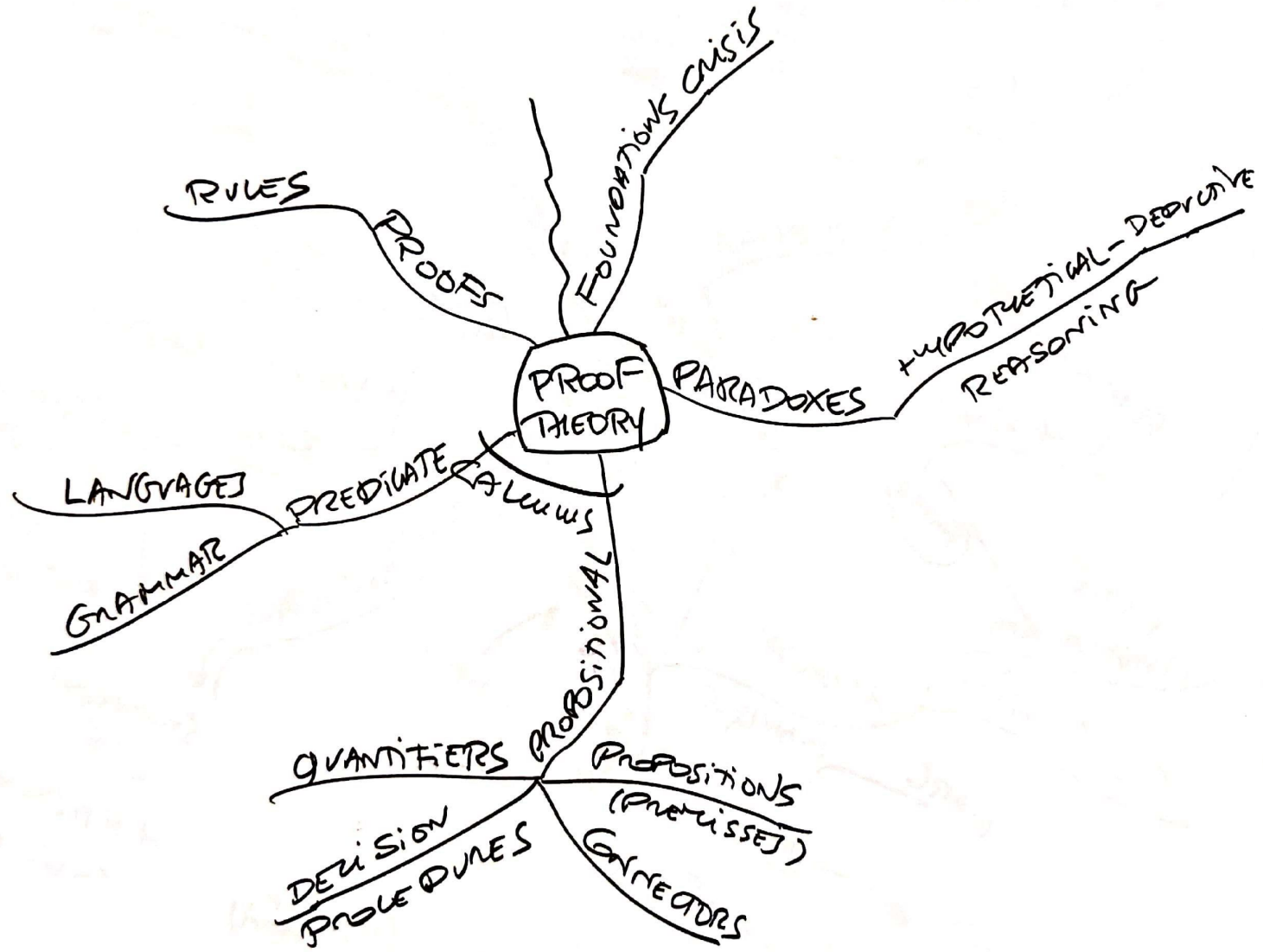
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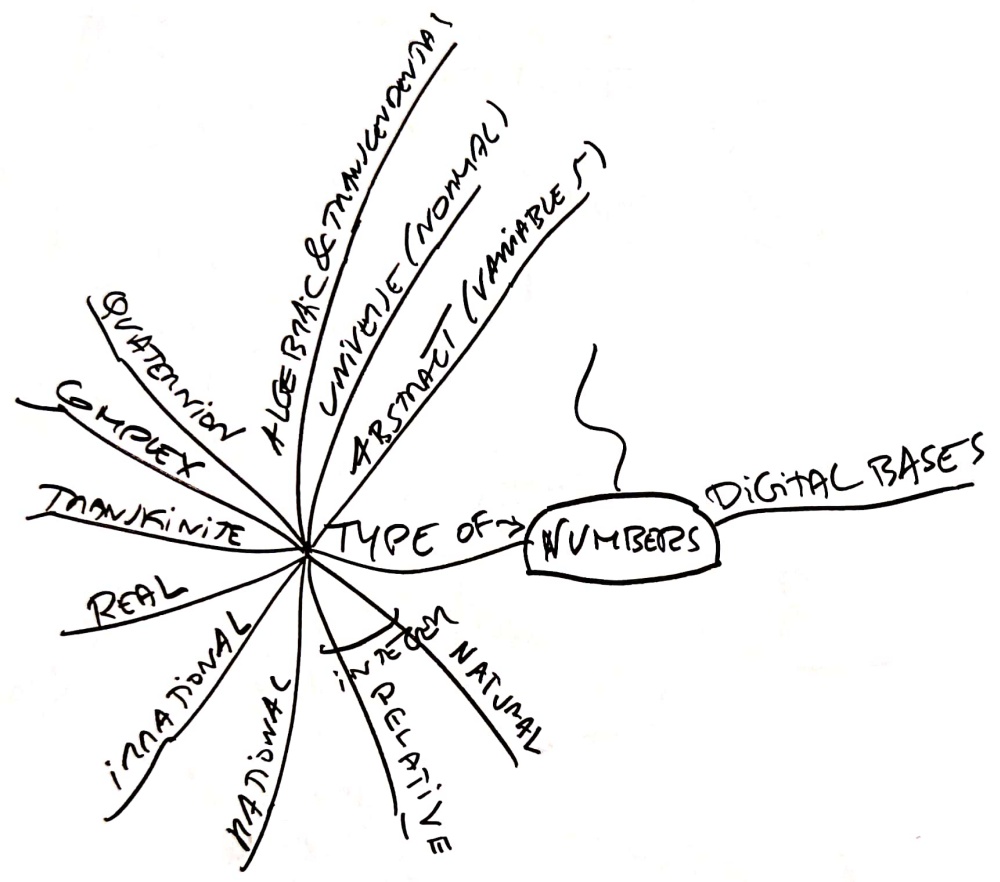
(HOW TO CHANGE MINDS)

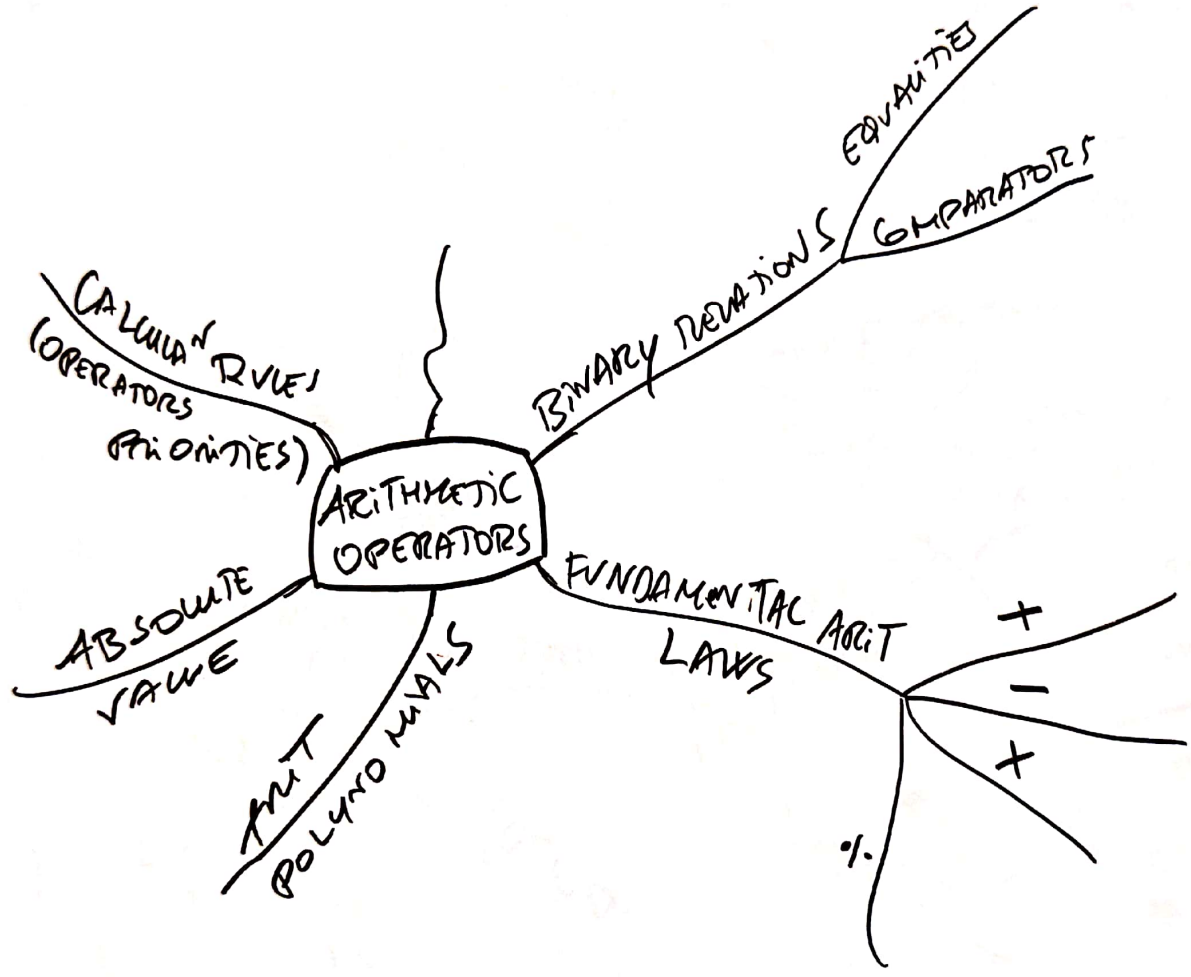
77 pages!

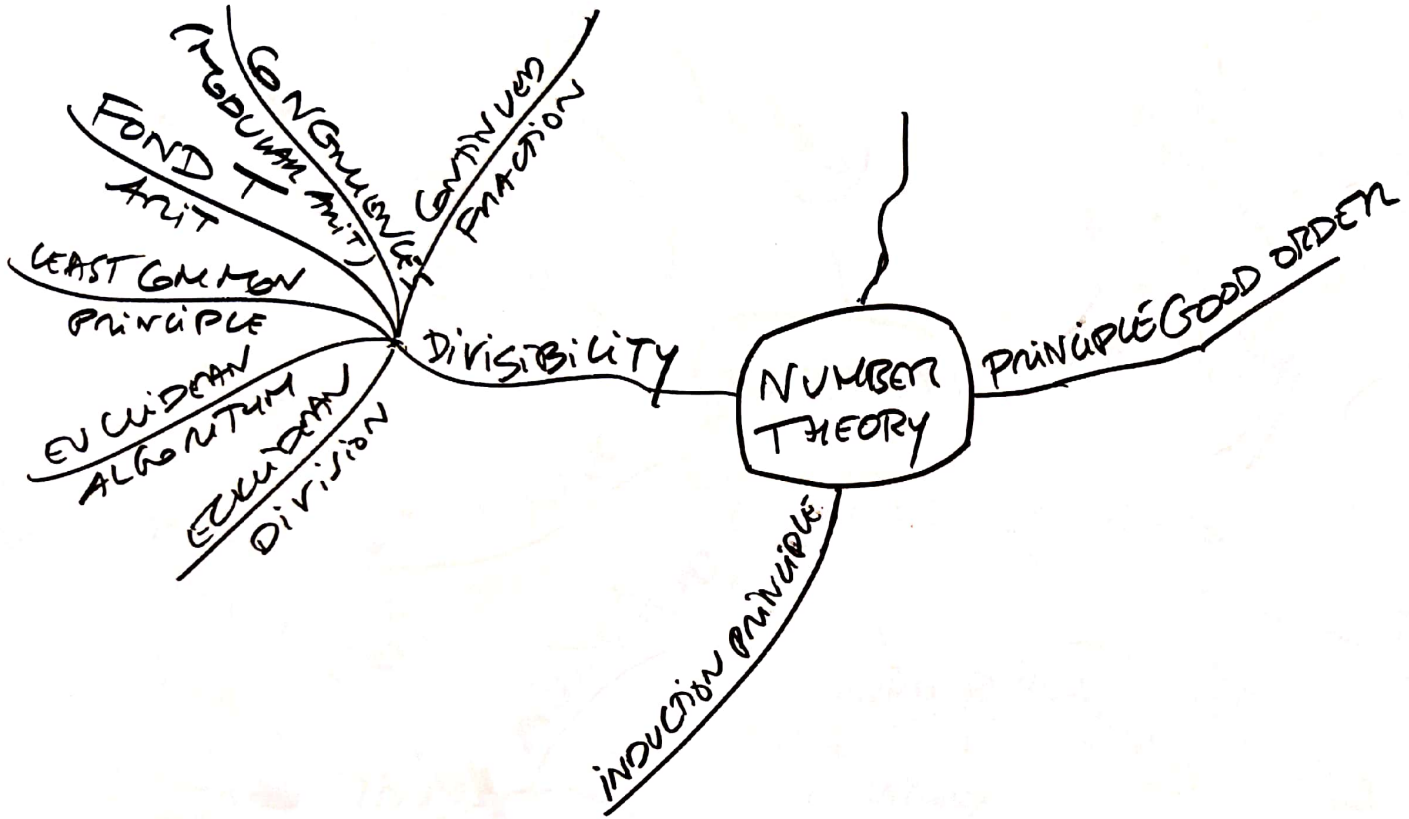


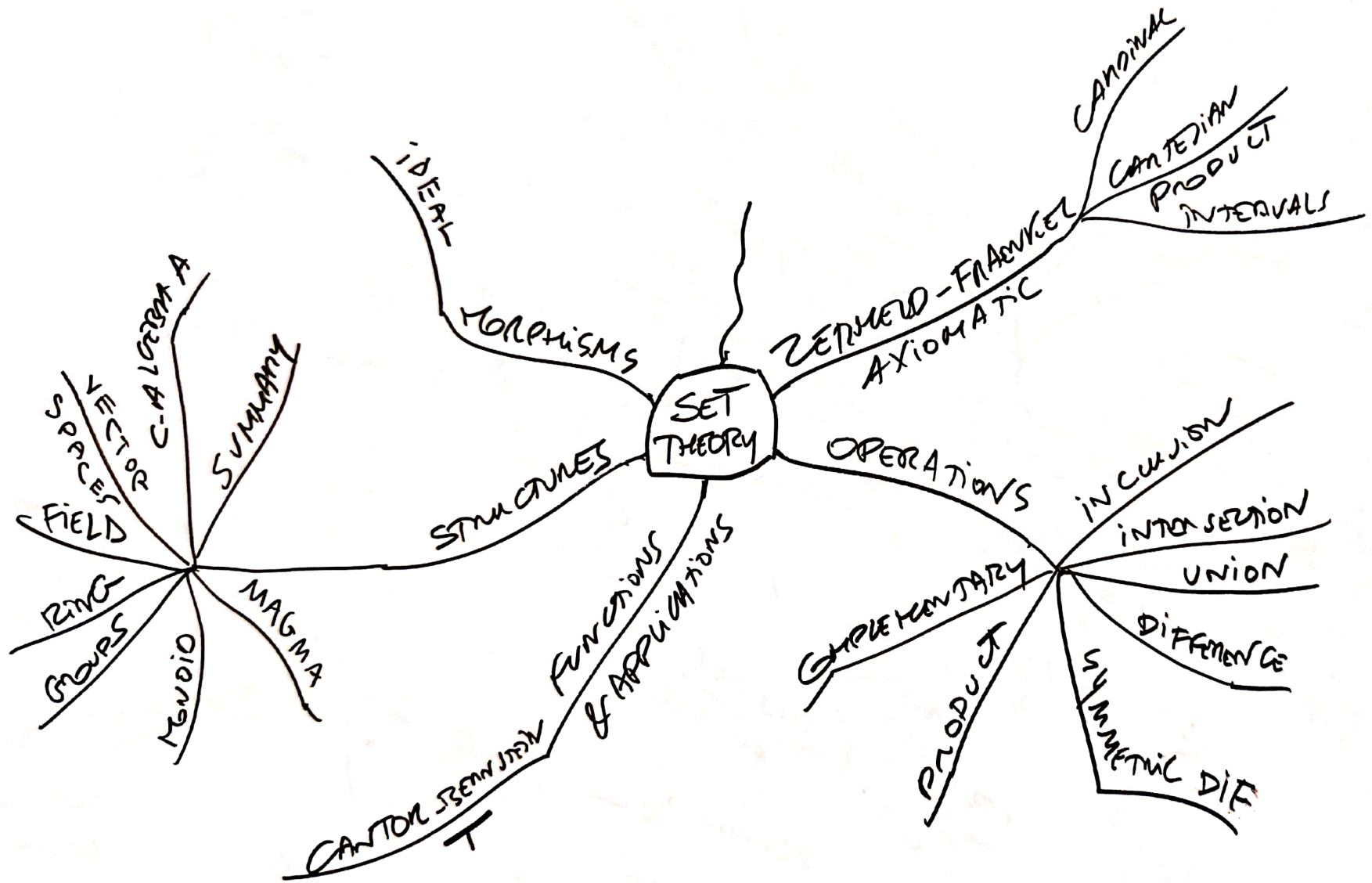
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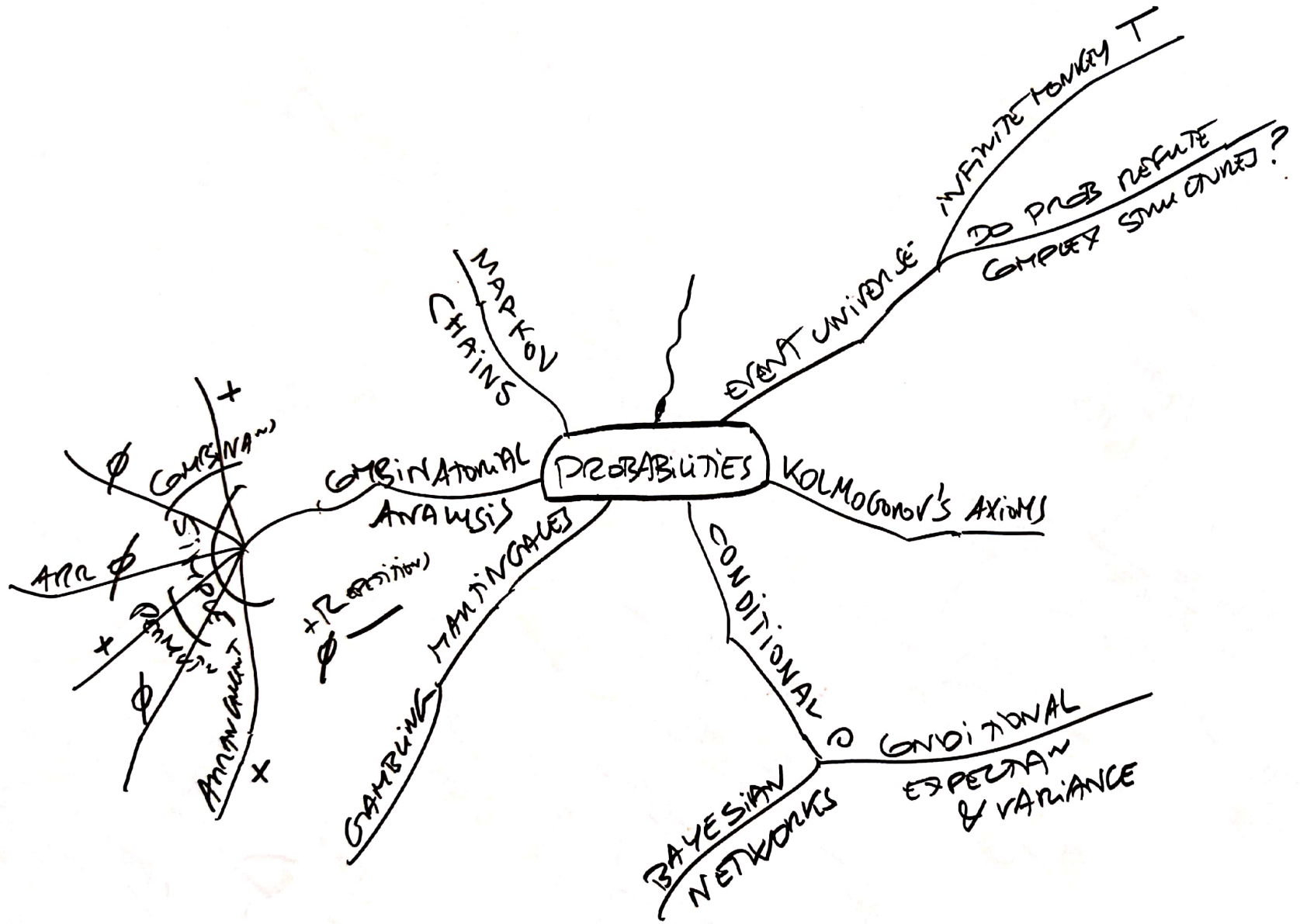












STATISTICS

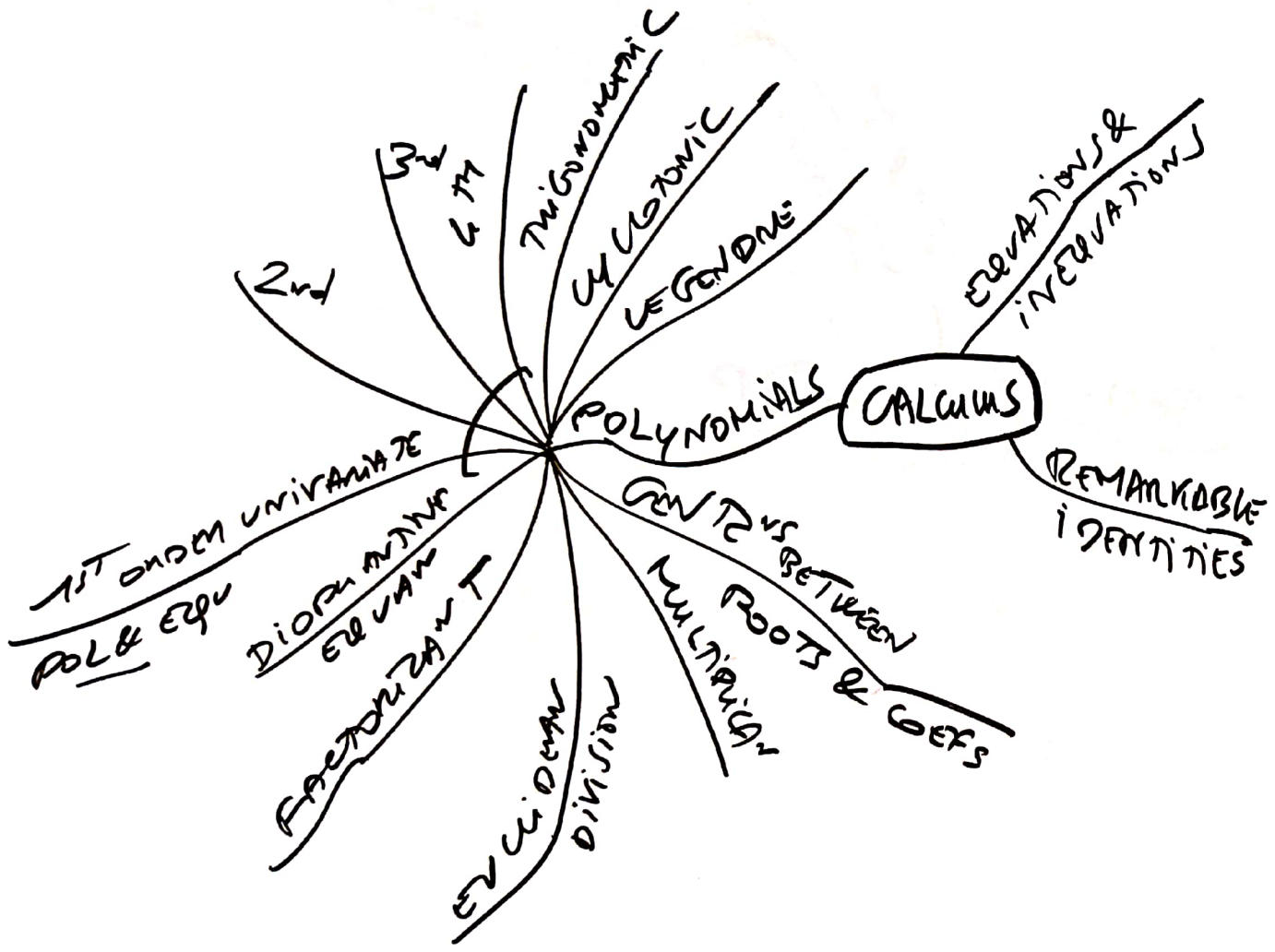
DATA FAULCIES
 A WORLD WITHOUT
 STAT SURVEYS
 SPATIAL STAT
 SAMPLING ERR & NON
 DESIGNS
 PROPAGAN ERRORS
 SURVIVAL STAT
 MULTIVARIATE STAT

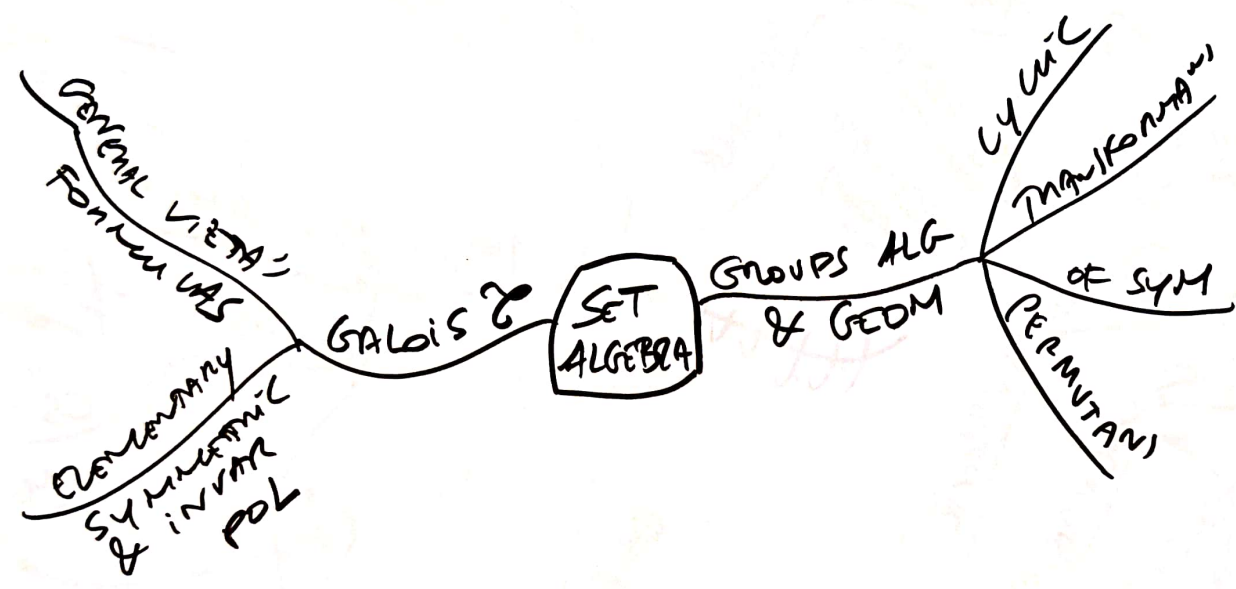
SAMPLES
 AVERAGES
 TYPES VARIABLES
 FUNDAMENTAL POSTULATE
 DIVERSITY INDEX
 DISTRIBUTION (LAW) (LAW)
 LIKELIHOOD ESTIMATORS
 FINITE POPULATION CORRECT FACTOR
 CONFIDENCE INTERVALS (INFERENCE)
 WEAK LAW LARGE NUMBERS
 CLAMPING WITH FUNCTION
 DIMENSION OF H TEST & H-VALUES
 FISHER'S TEST FOR MULT
 POWER TEST
 ONE SAMPLE
 ONE 2 TEST
 FISHER INFORMATION

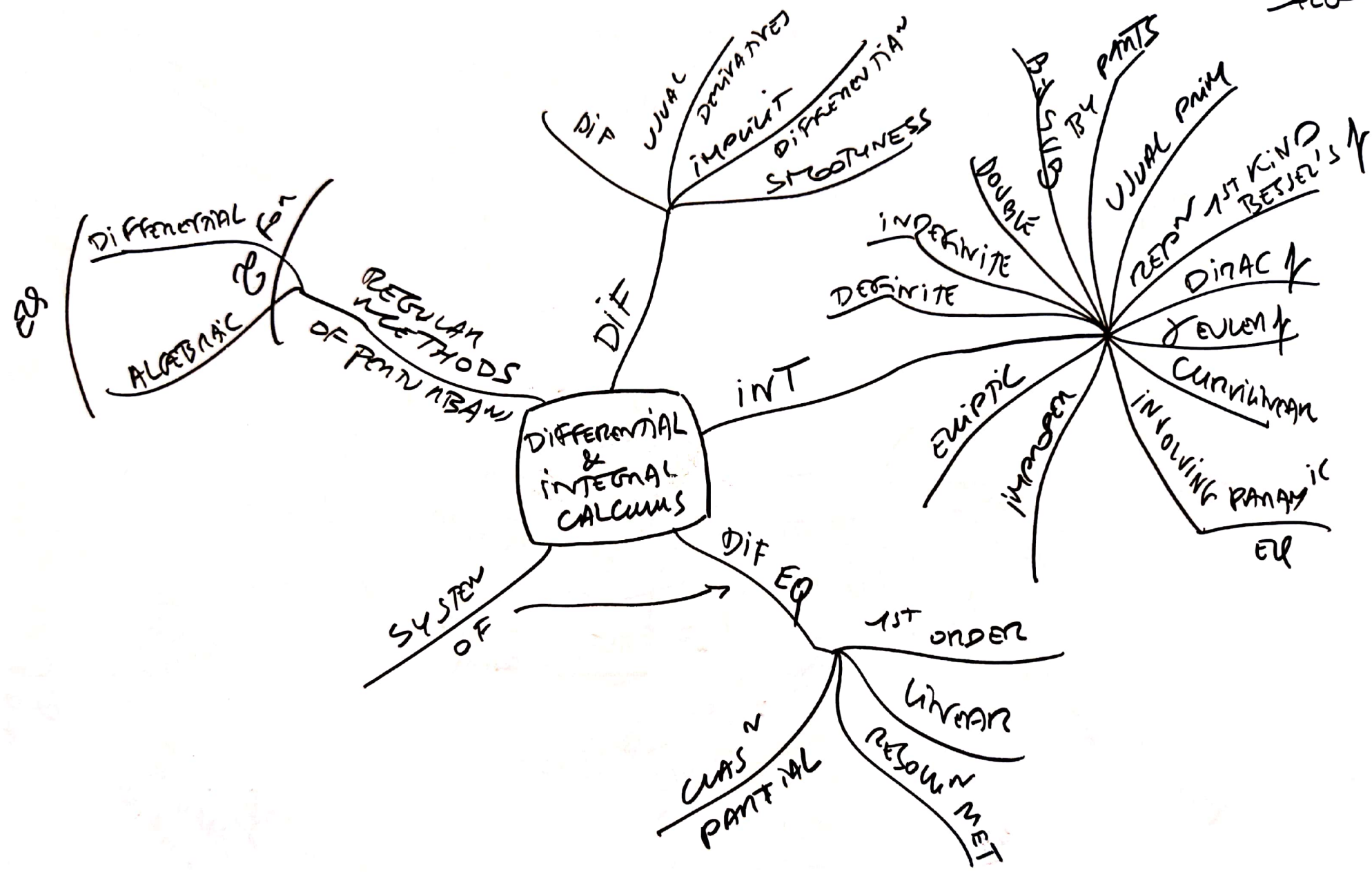
EXTREME VALUE
 RANGE
 RANK
 ROBUSTNESS & NON
 PARAMETRIC STAT
 UNIVARIATE HYPOTHESIS & ADEQUATION TEST (NHST)
 CENTRAL LIMIT
 CLAMPING WITH FUNCTION
 EQUIV TESTS
 ANOVA
 ABS TESTS
 ONE 2 TEST
 SURVIVAL STAT
 KAPLAN-MANTER
 HAENSZEL TESTS
 KAPLAN-MANTER
 SURVIVAL RATE
 NEMAR'S TEST
 KAPPA A (MEASUREMENT)

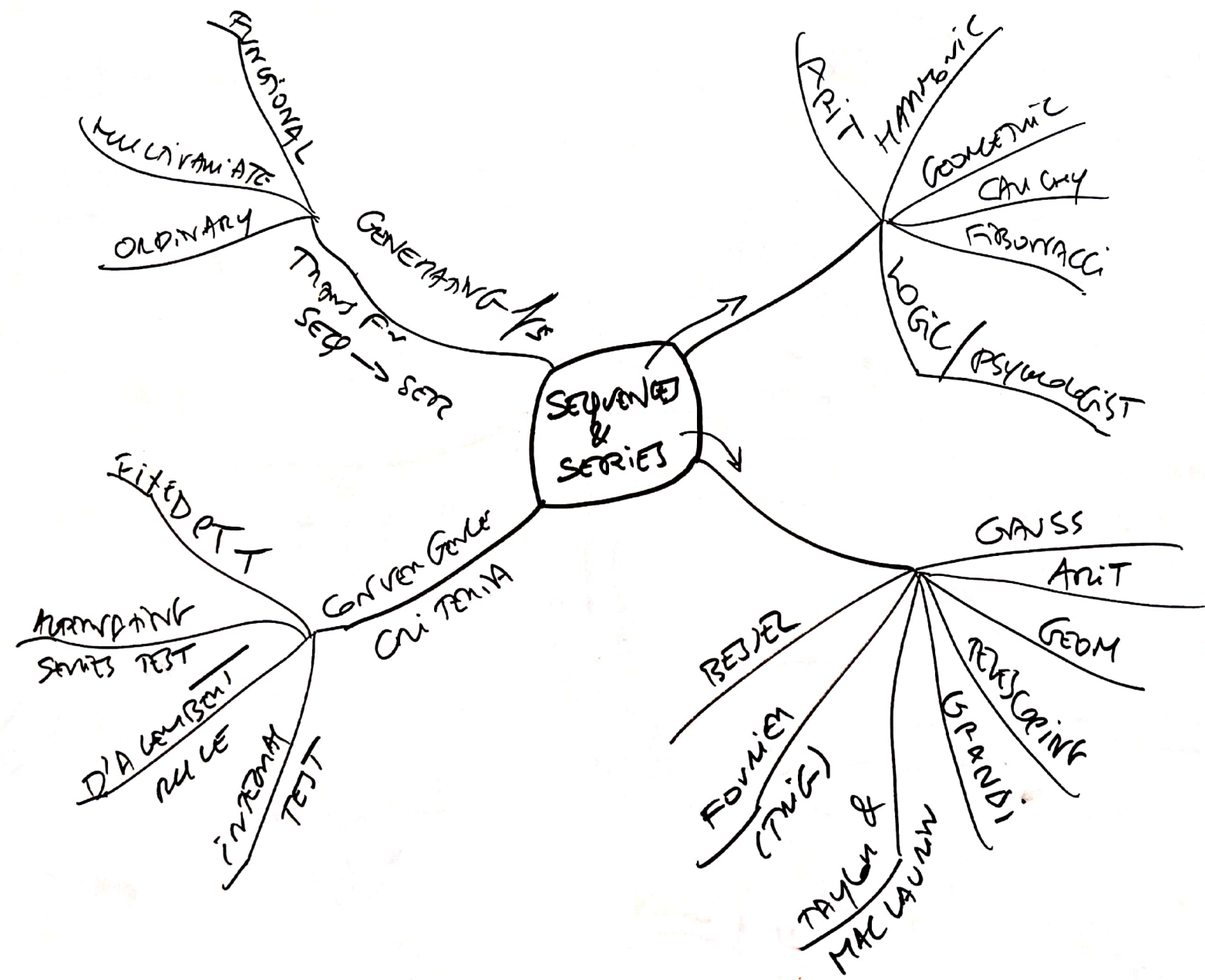
DISCRETE UNIF
 BERNOLLI
 GEOMETRIC
 BINOMIAL
 NEGATIVE
 HYPER GEOM
 MULTINOM
 POISSON
 NORMAL & GAUSS UNIF
 GO-NORMAL
 CONTINUOUS UNIF
 TRIANGULAR
 PARETO
 EXPONENTIAL
 CAUCHY
 BETA
 GAMMA
 CHI SQUARE (PERMAN)
 STUDENT
 FISHER
 GIN FOLDED
 LAPLACE
 BENFORD
 NORMAL DIST MLE
 POISSON -
 BINOM -
 GEOM -
 WEIBULL -
 GAMMA -
 PARETO
 GEOSORP DATA

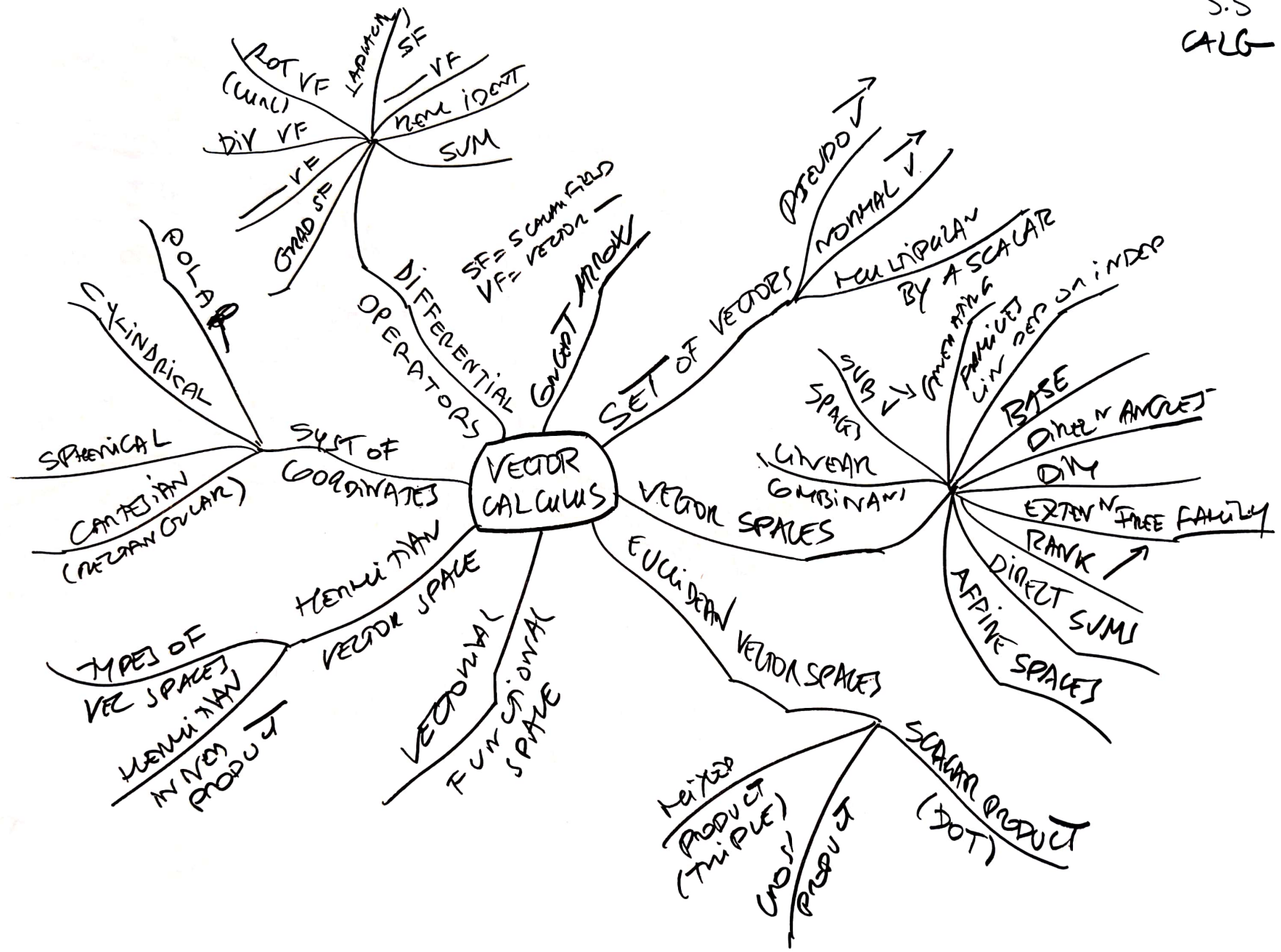
STAT APPROX
 UNREPEATED
 REPEATABILITY
 STAT ERRORS
 ABSOLUTE & RELAT
 UNC
 COVARIANCE
 MOD
 EXPONENTIAL
 UNCONTINUOUS
 ANALYSIS
 SIGNIFICANT MARKETS

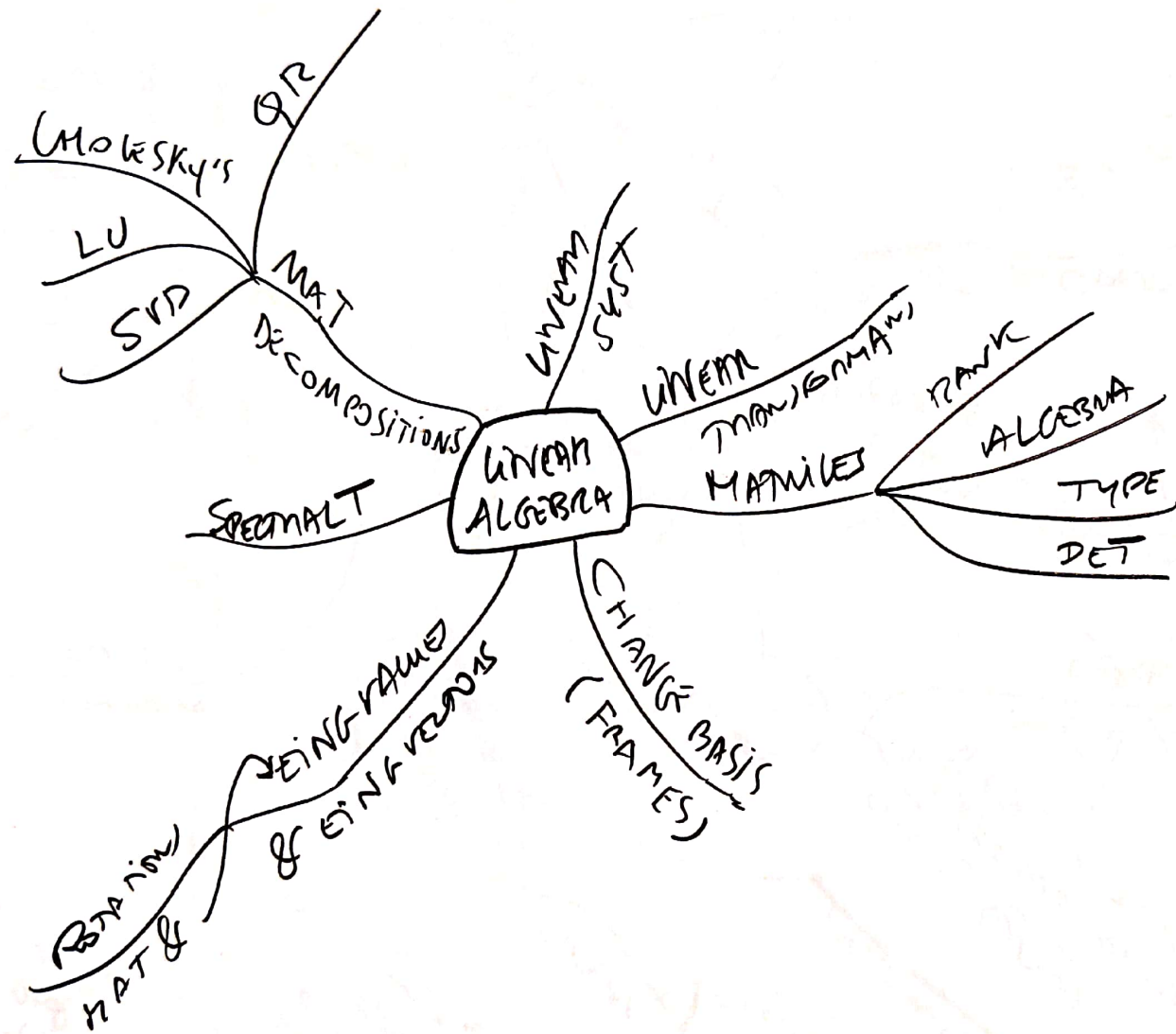


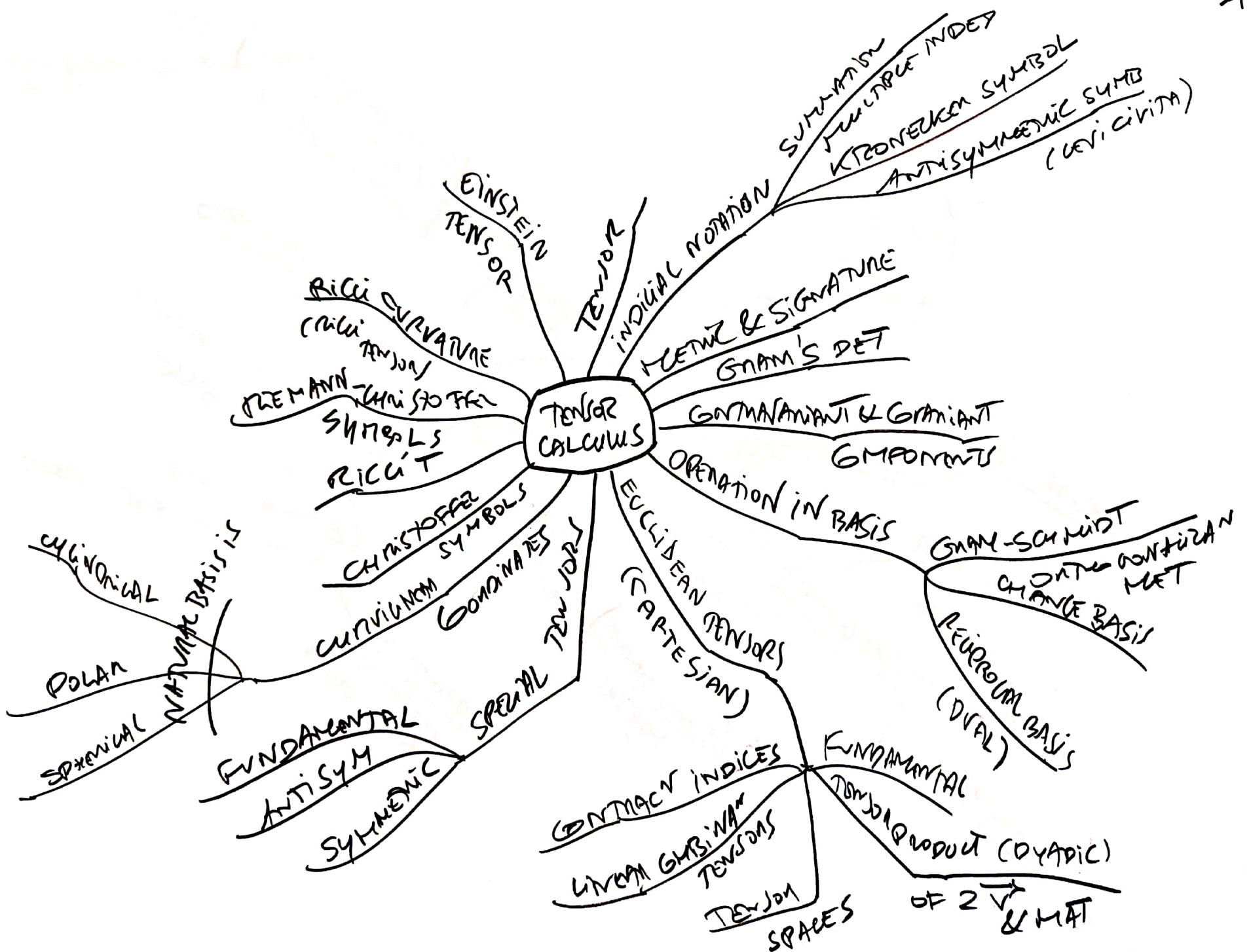


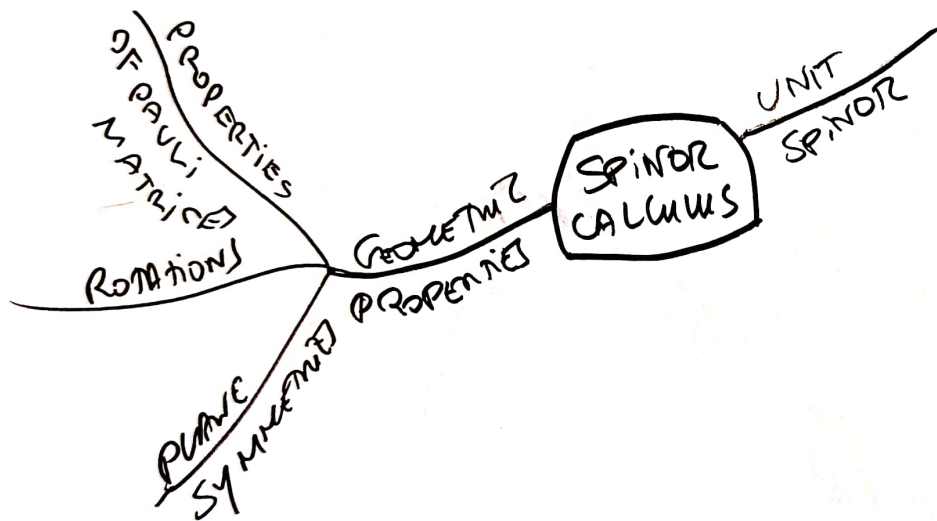


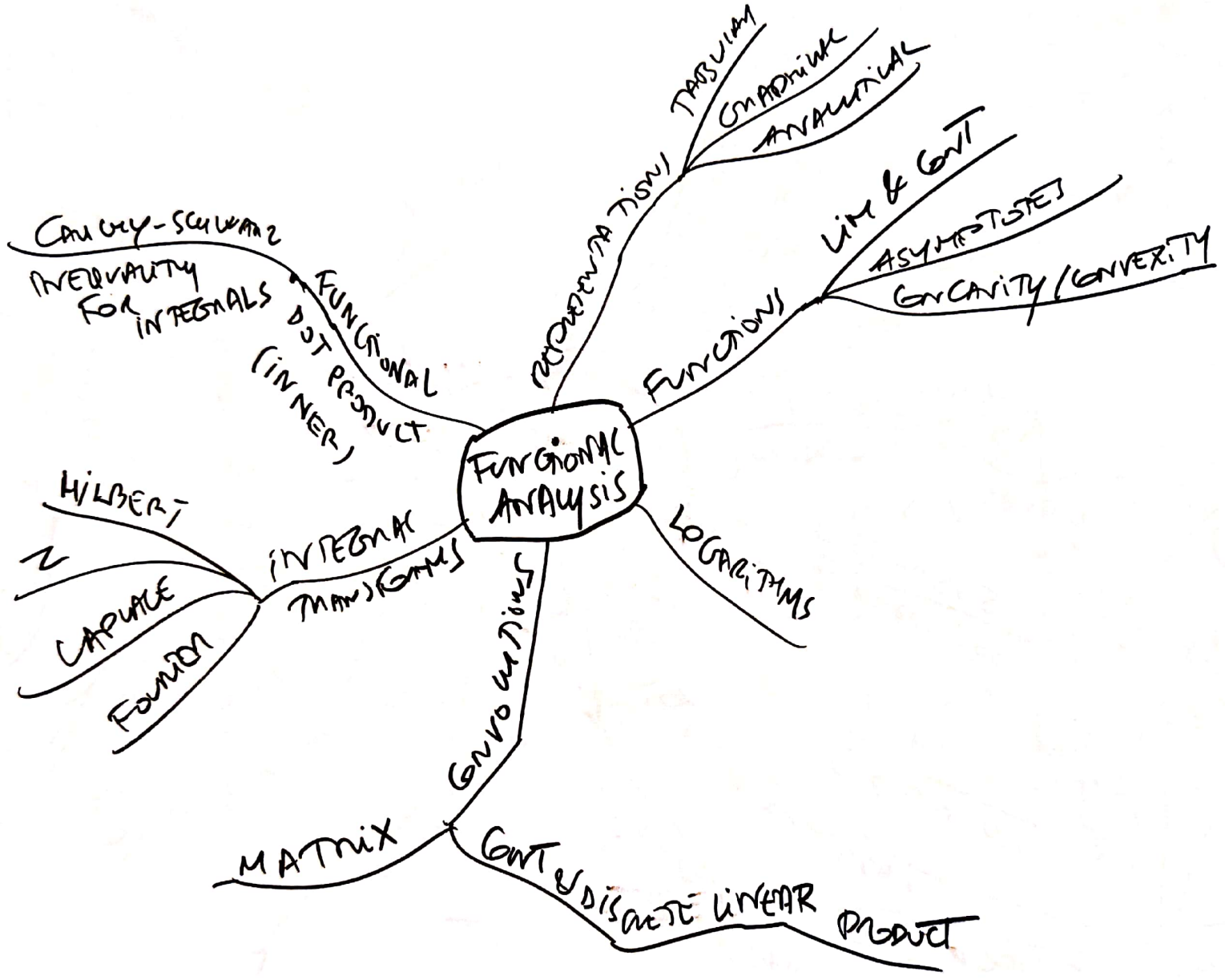


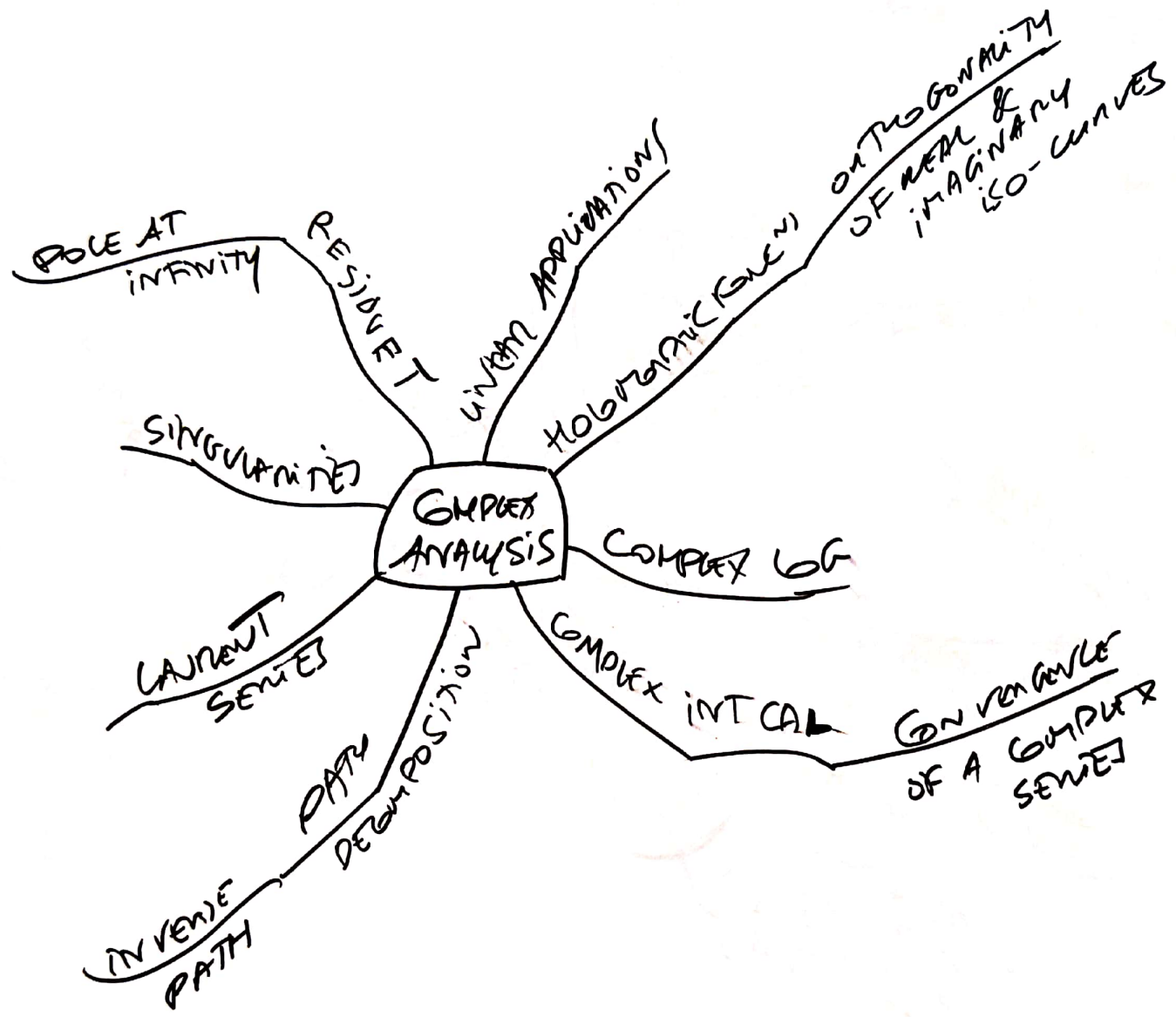


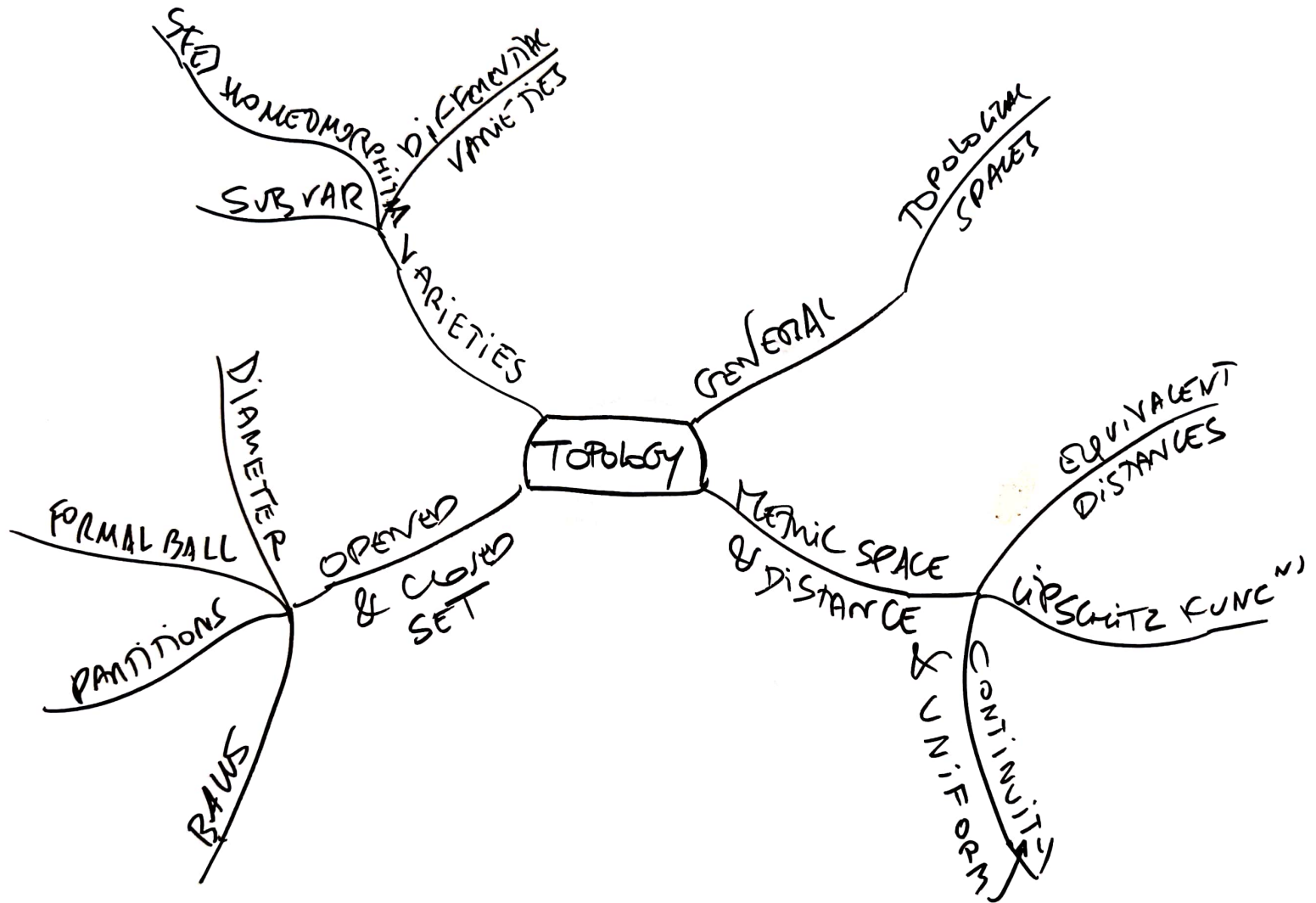


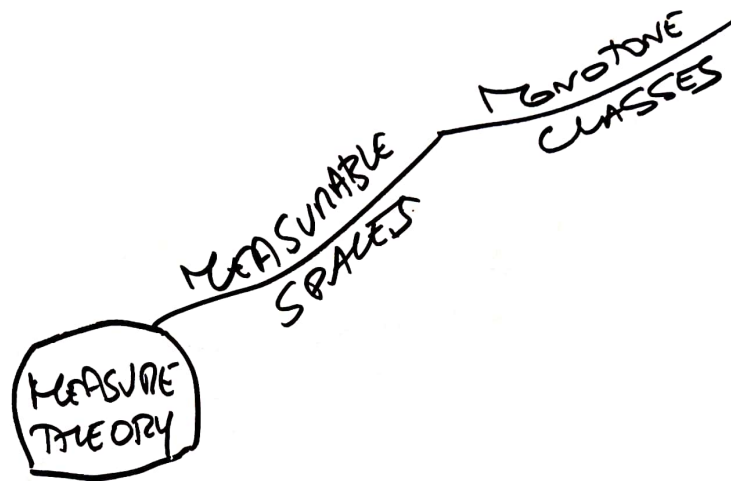


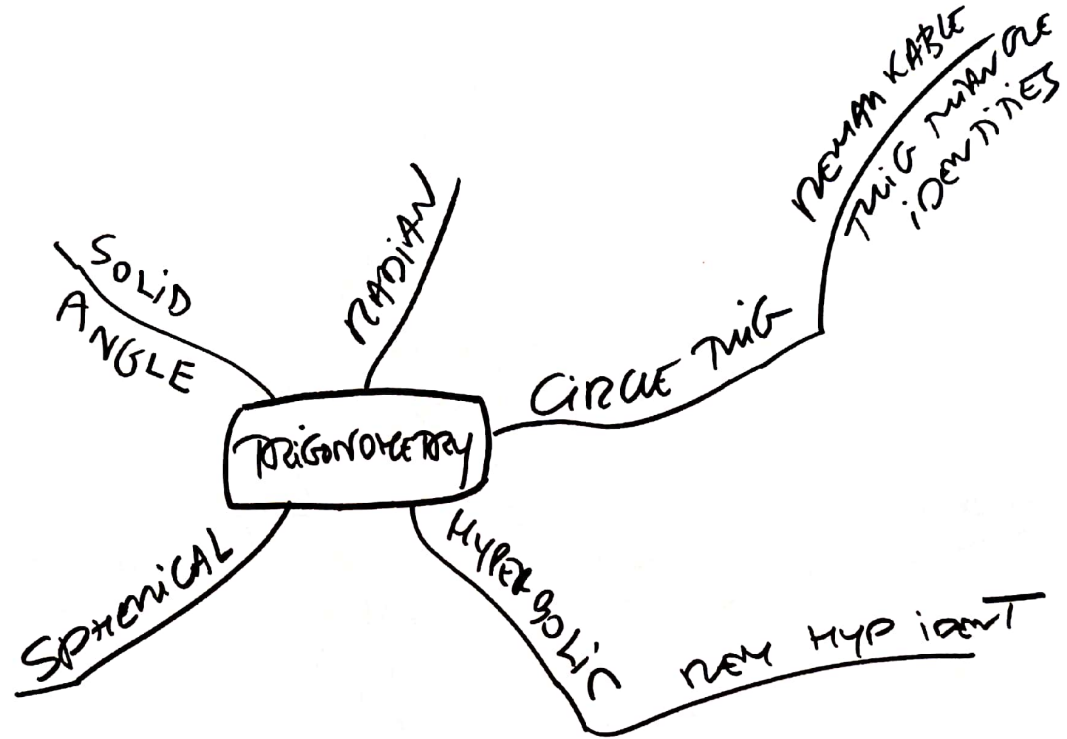


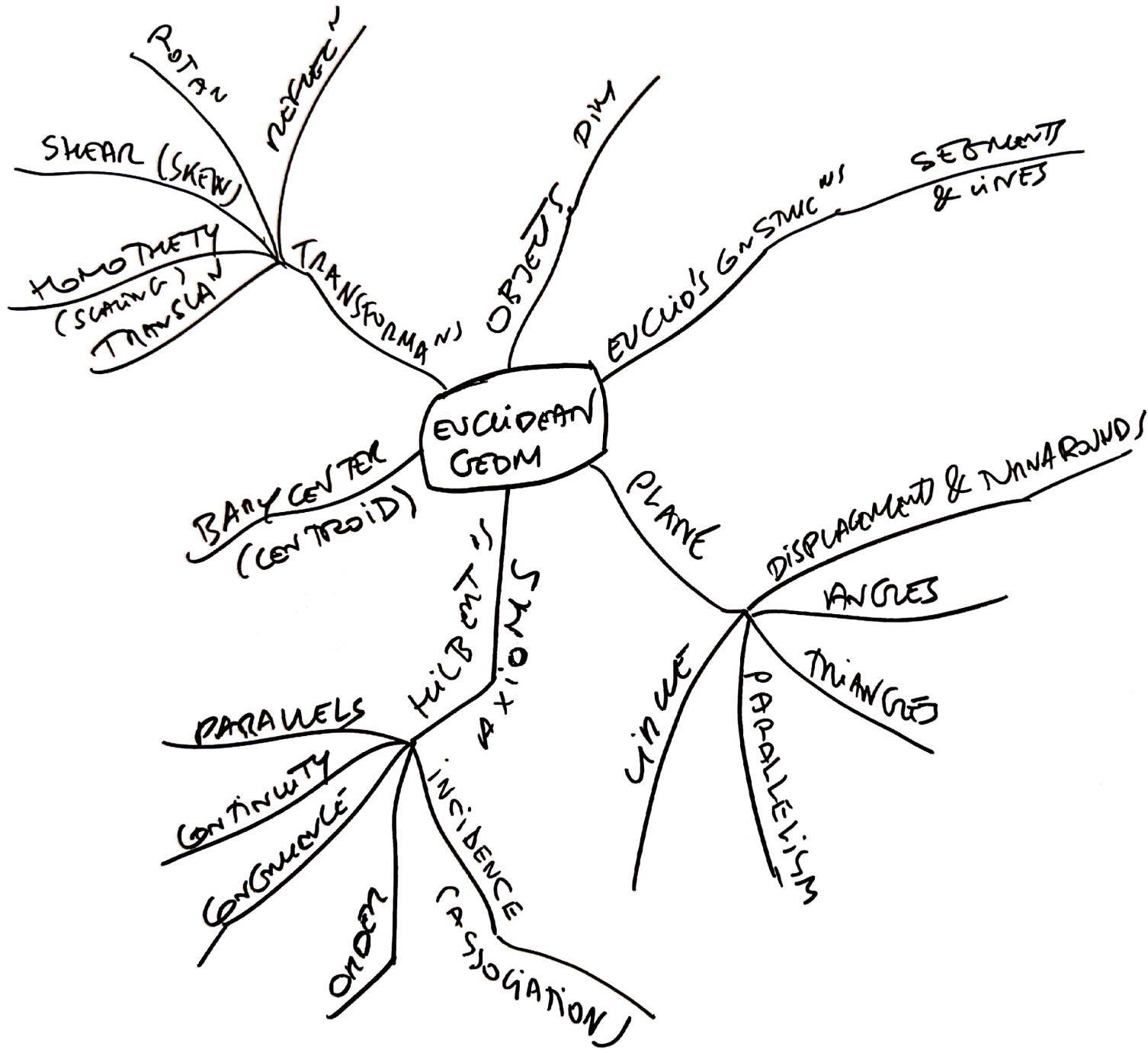


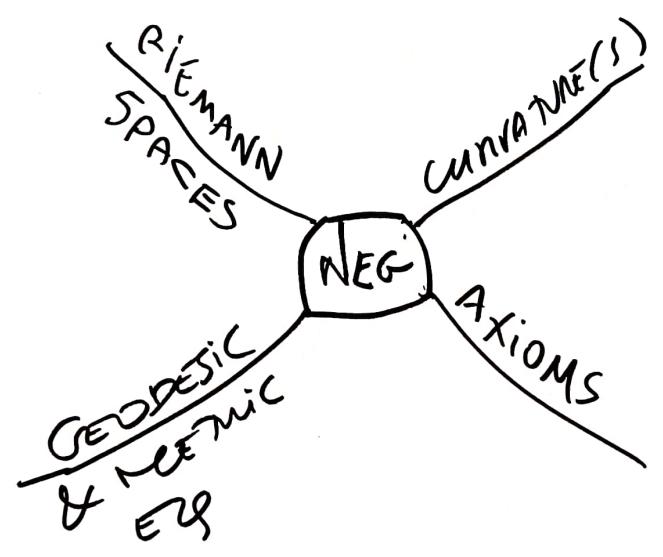


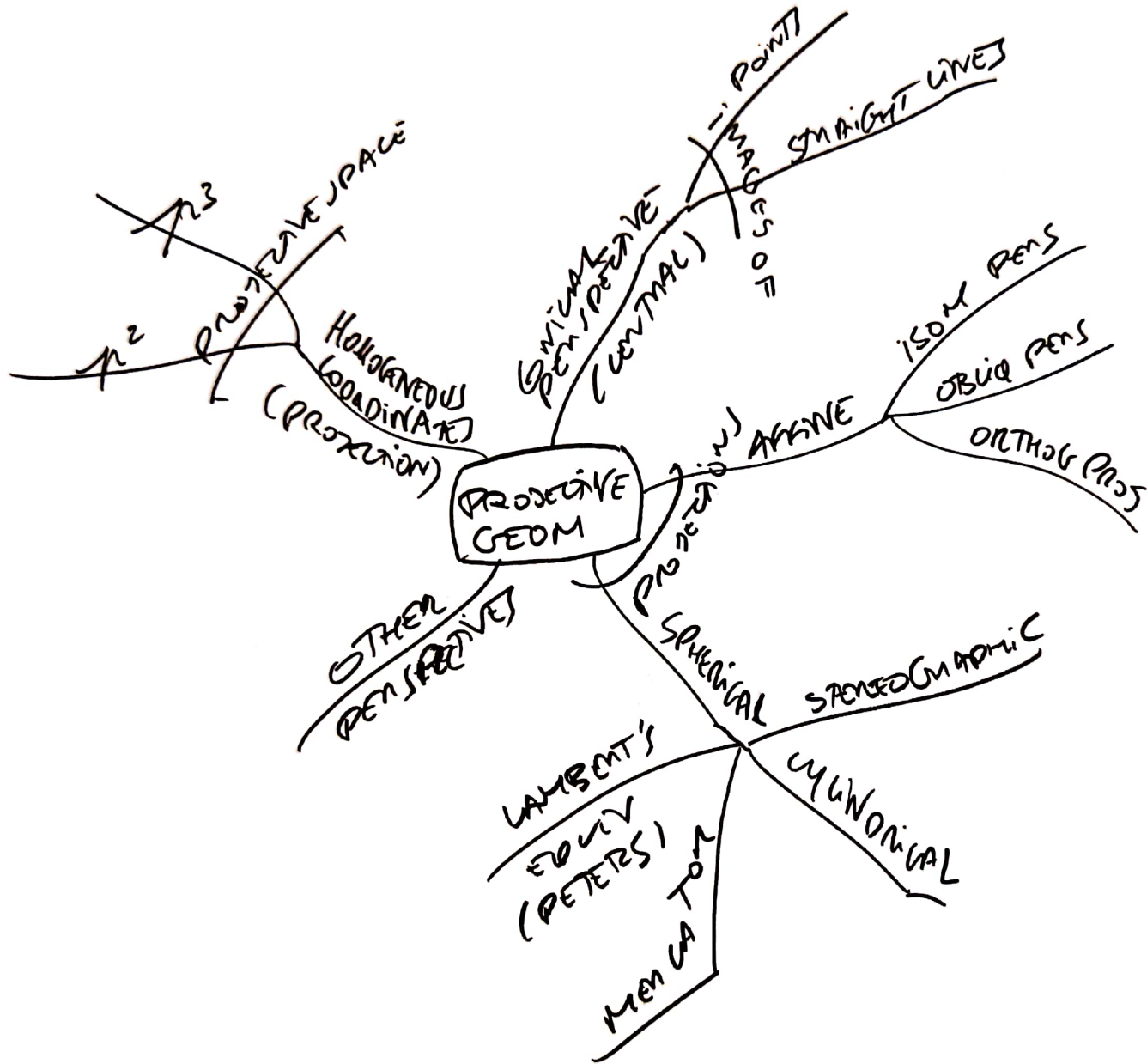


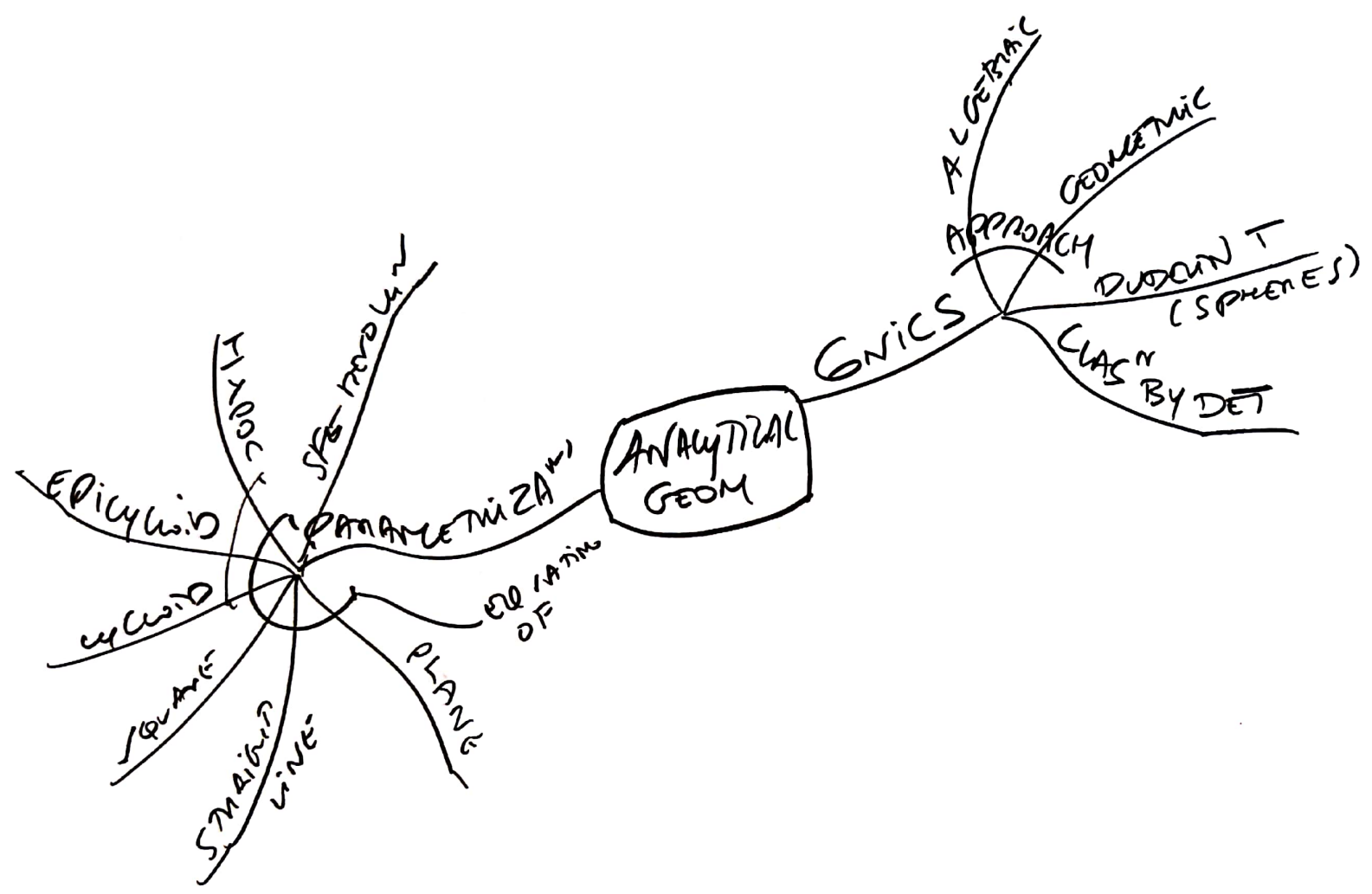


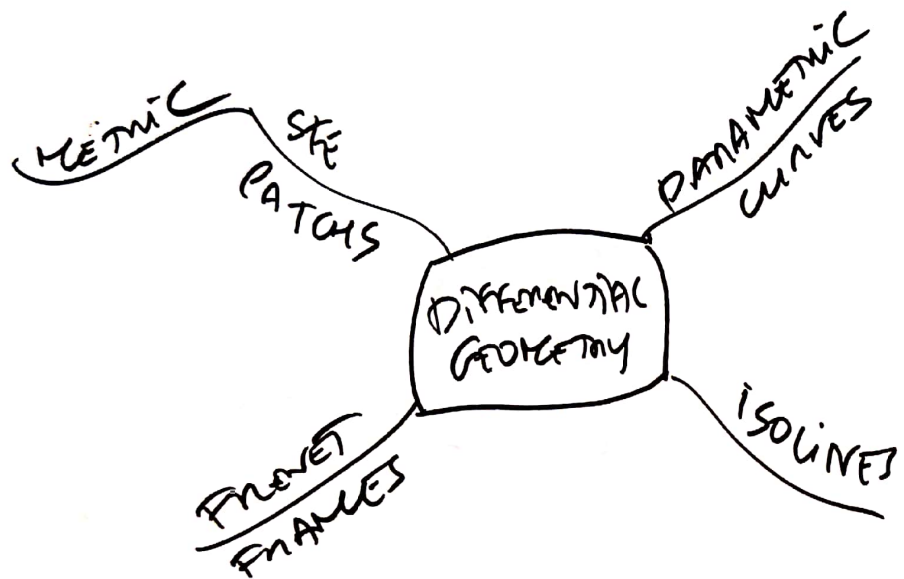


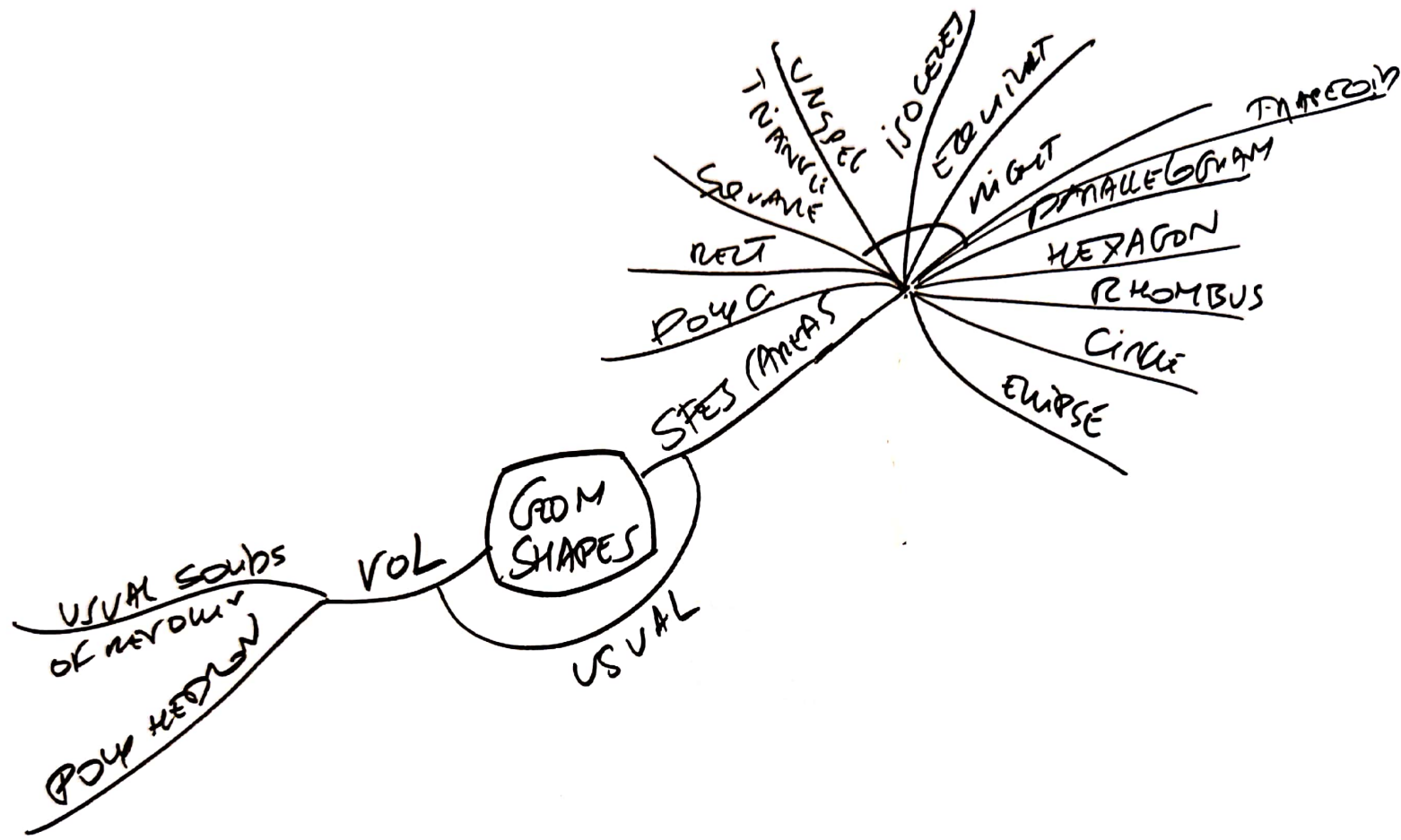


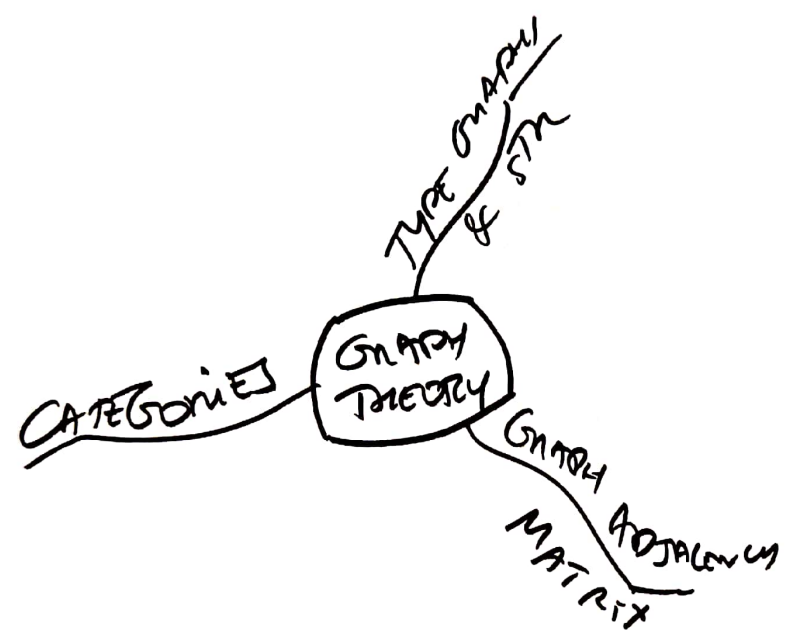


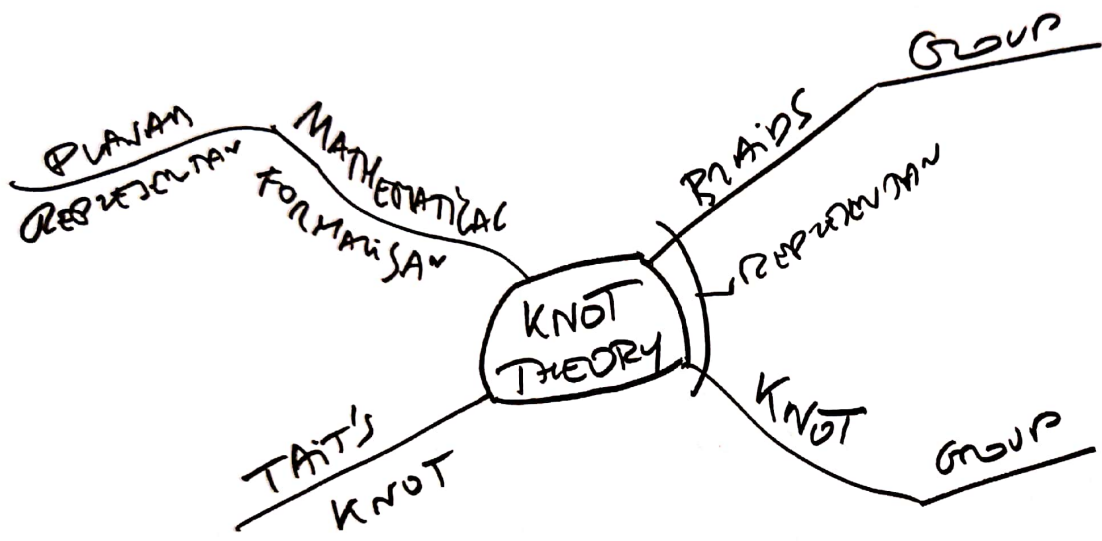


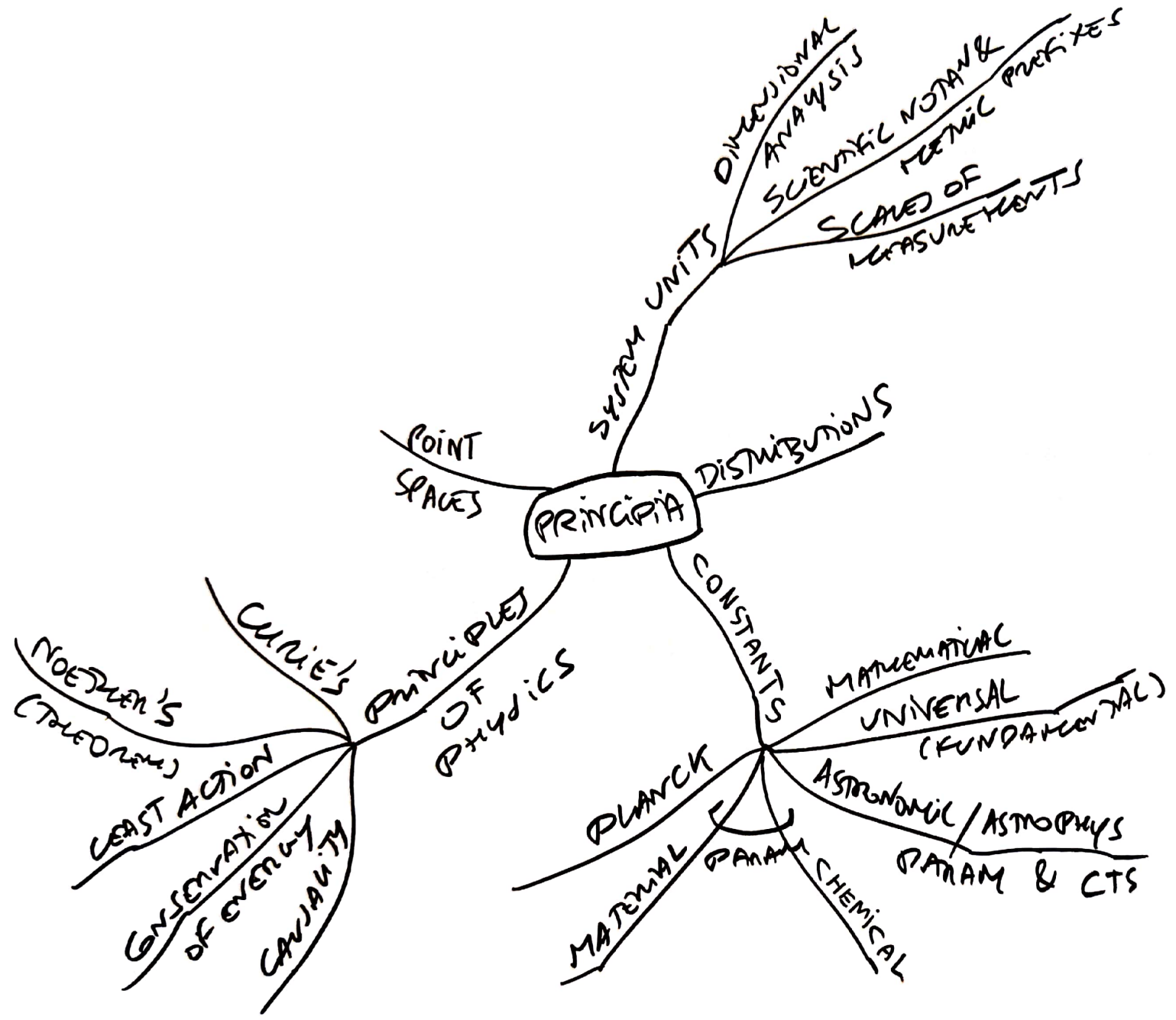


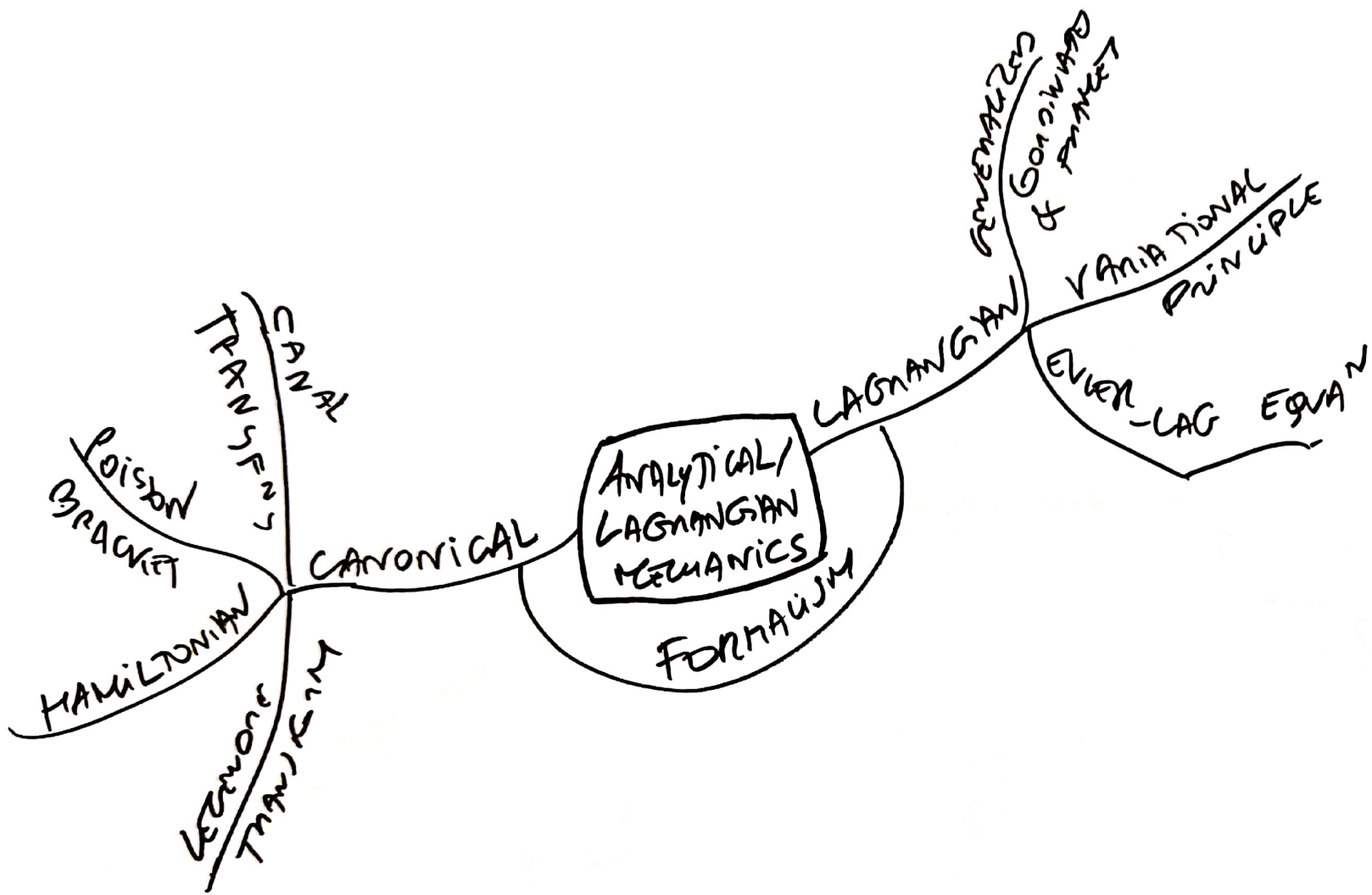


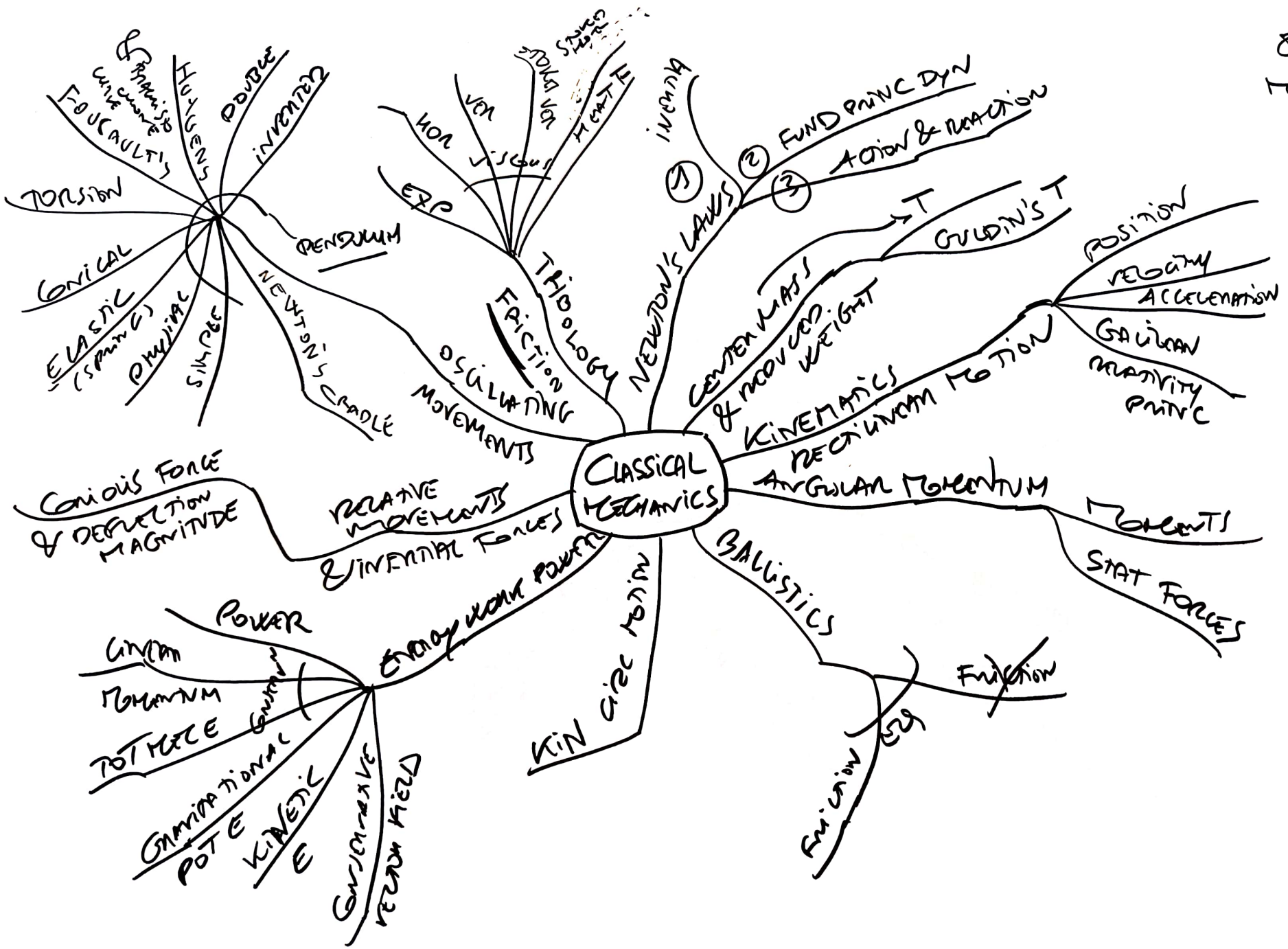


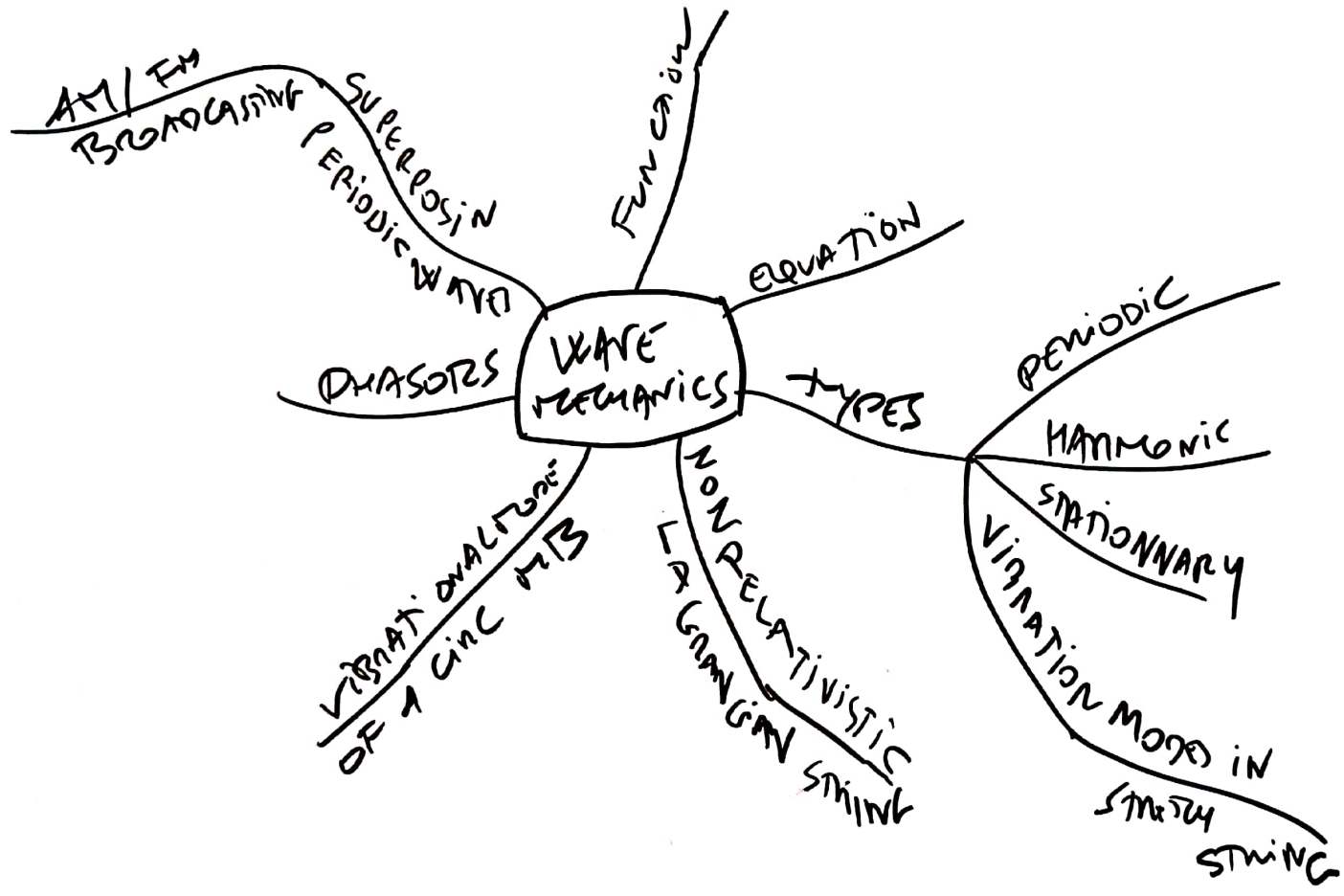


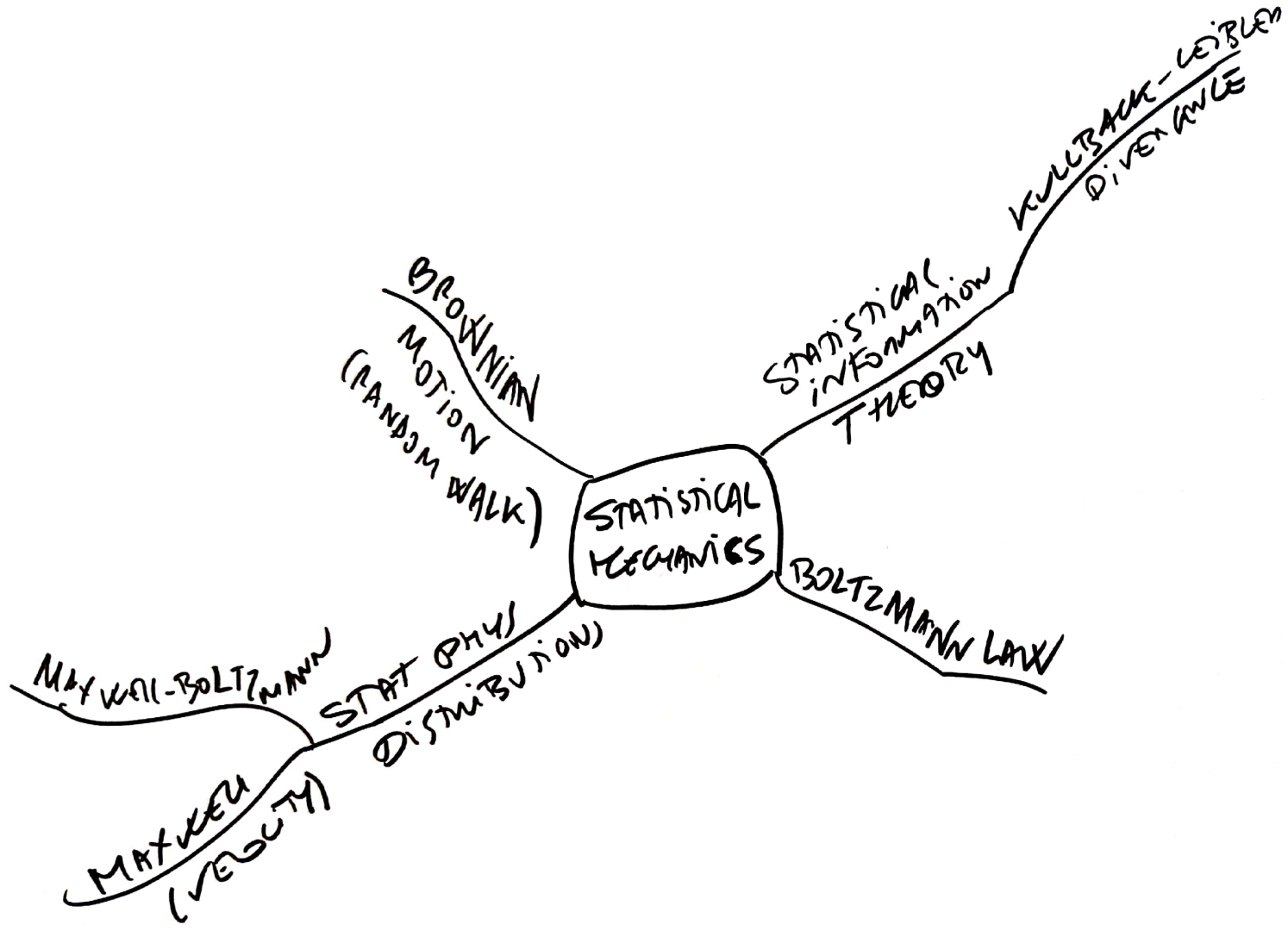


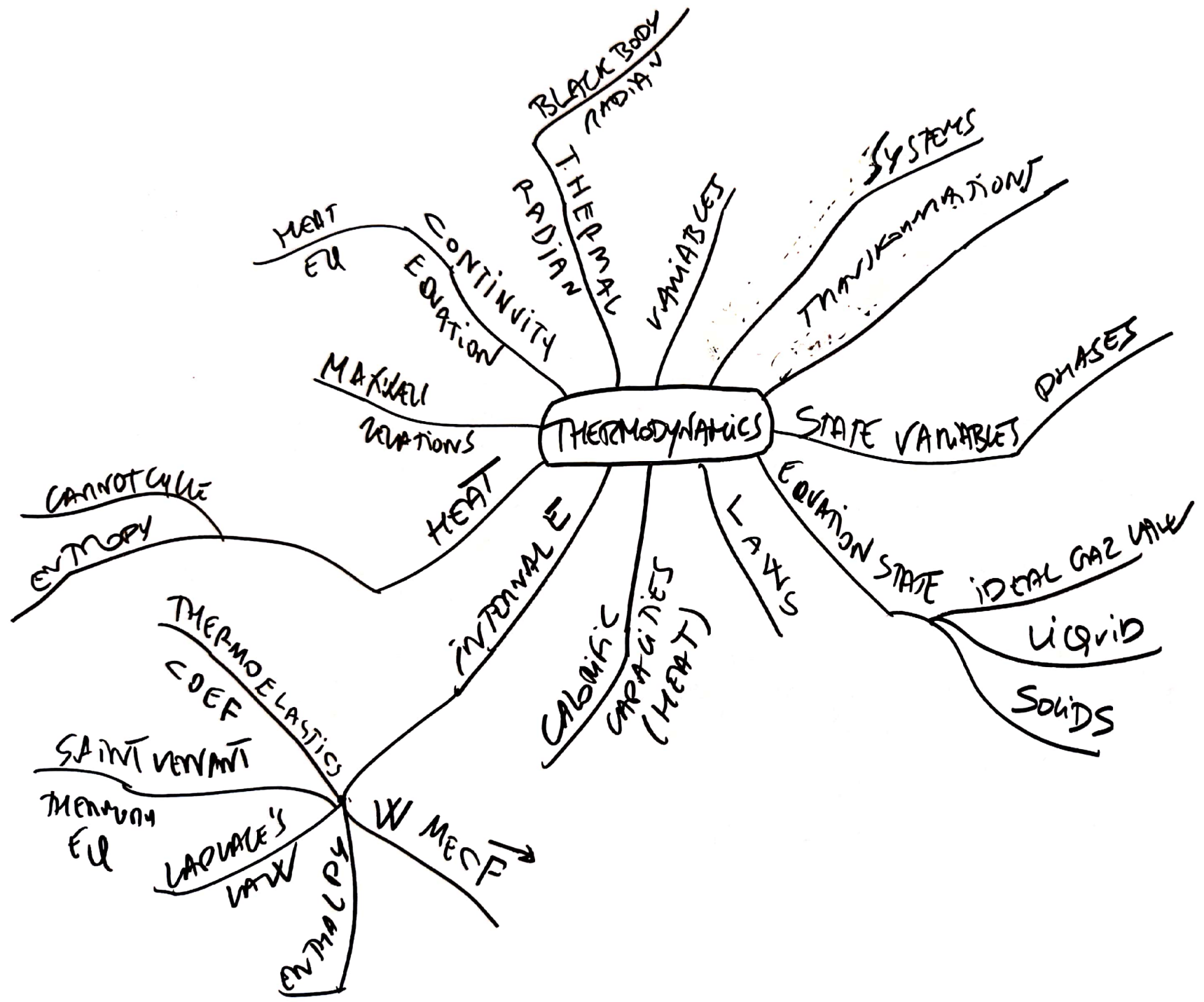


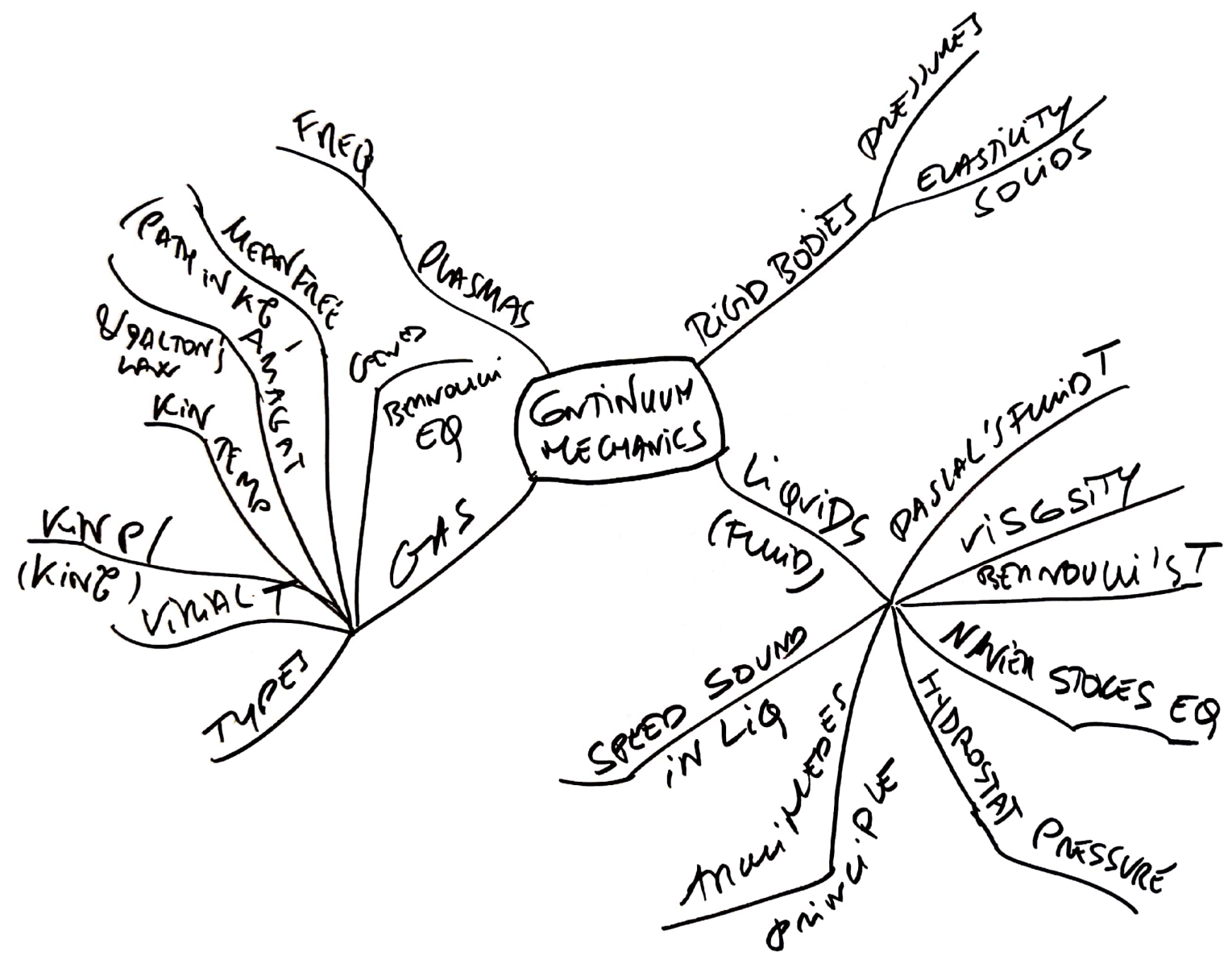


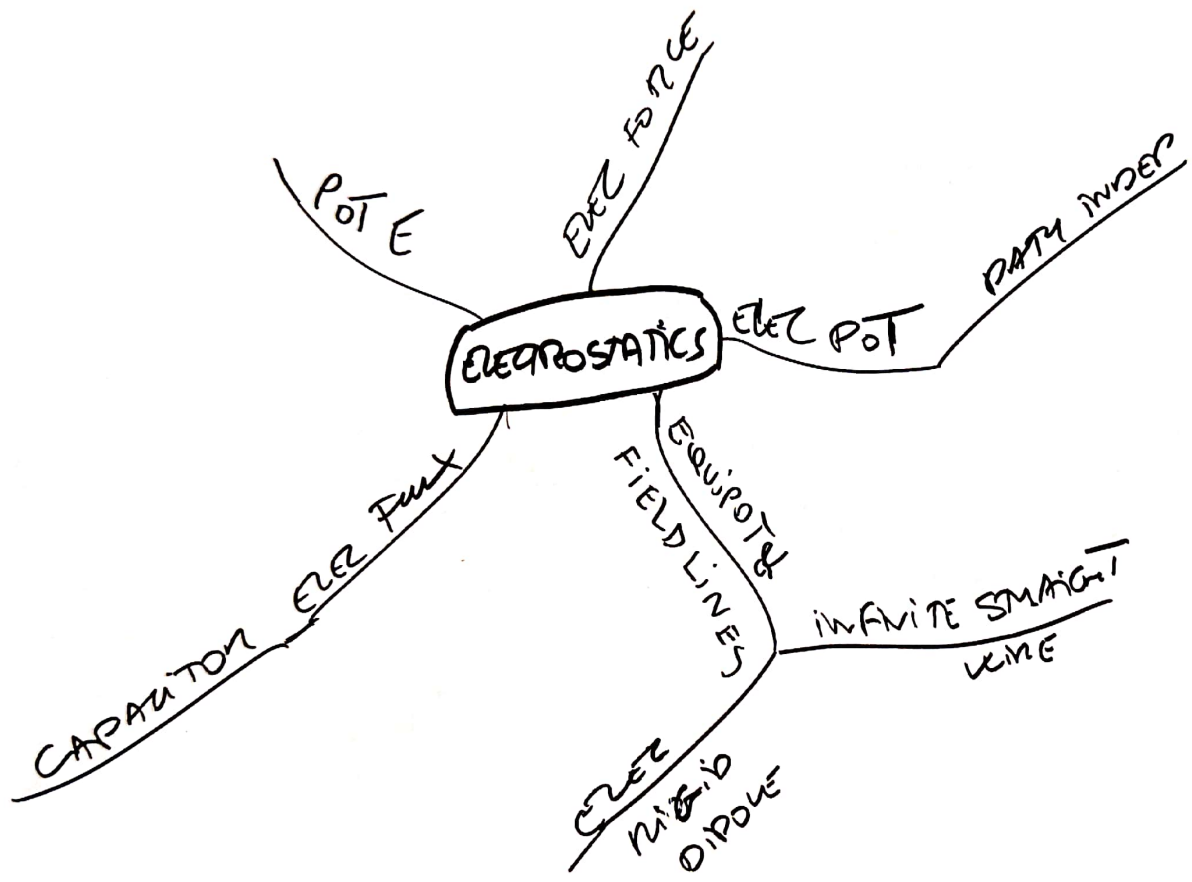


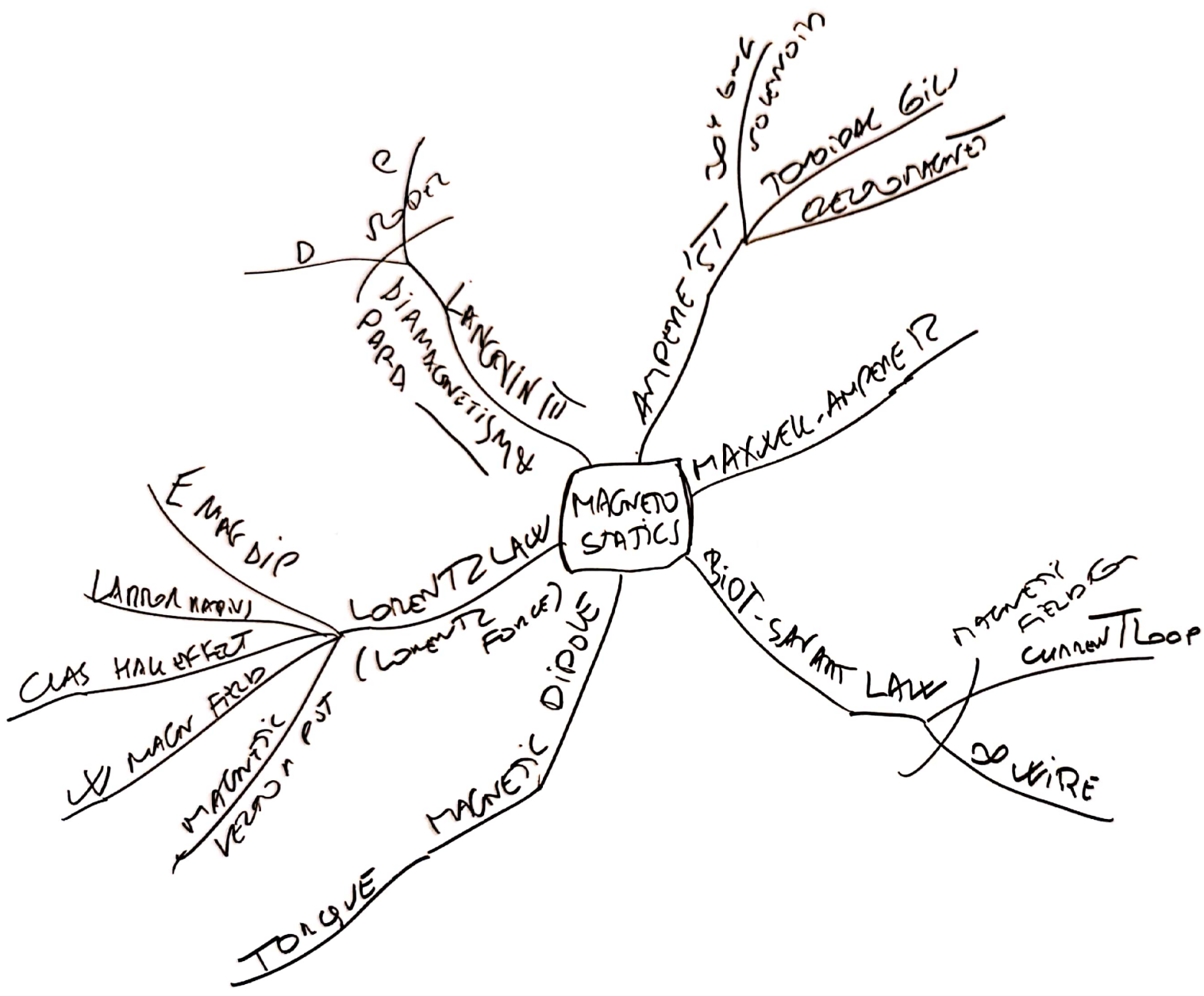


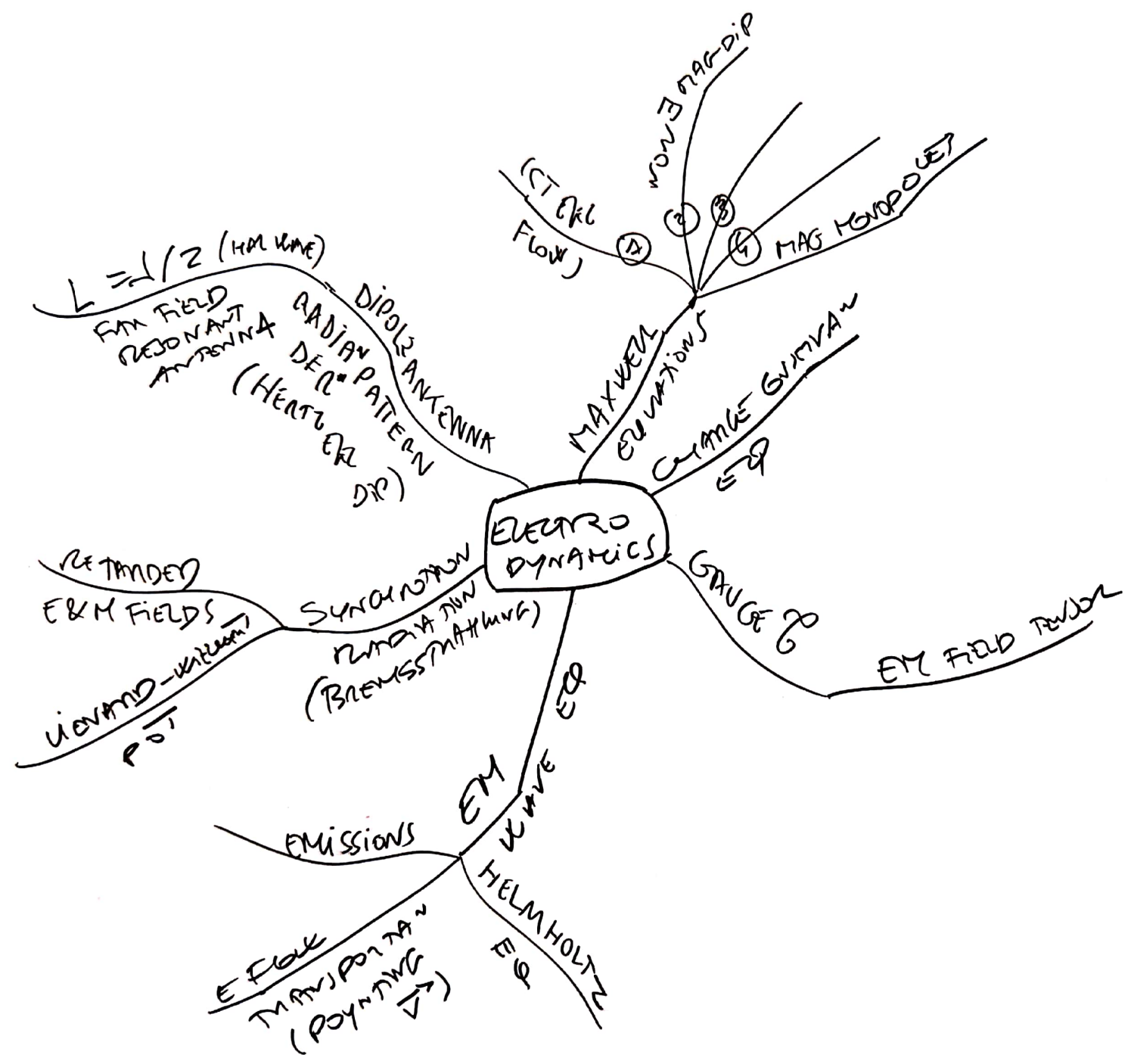


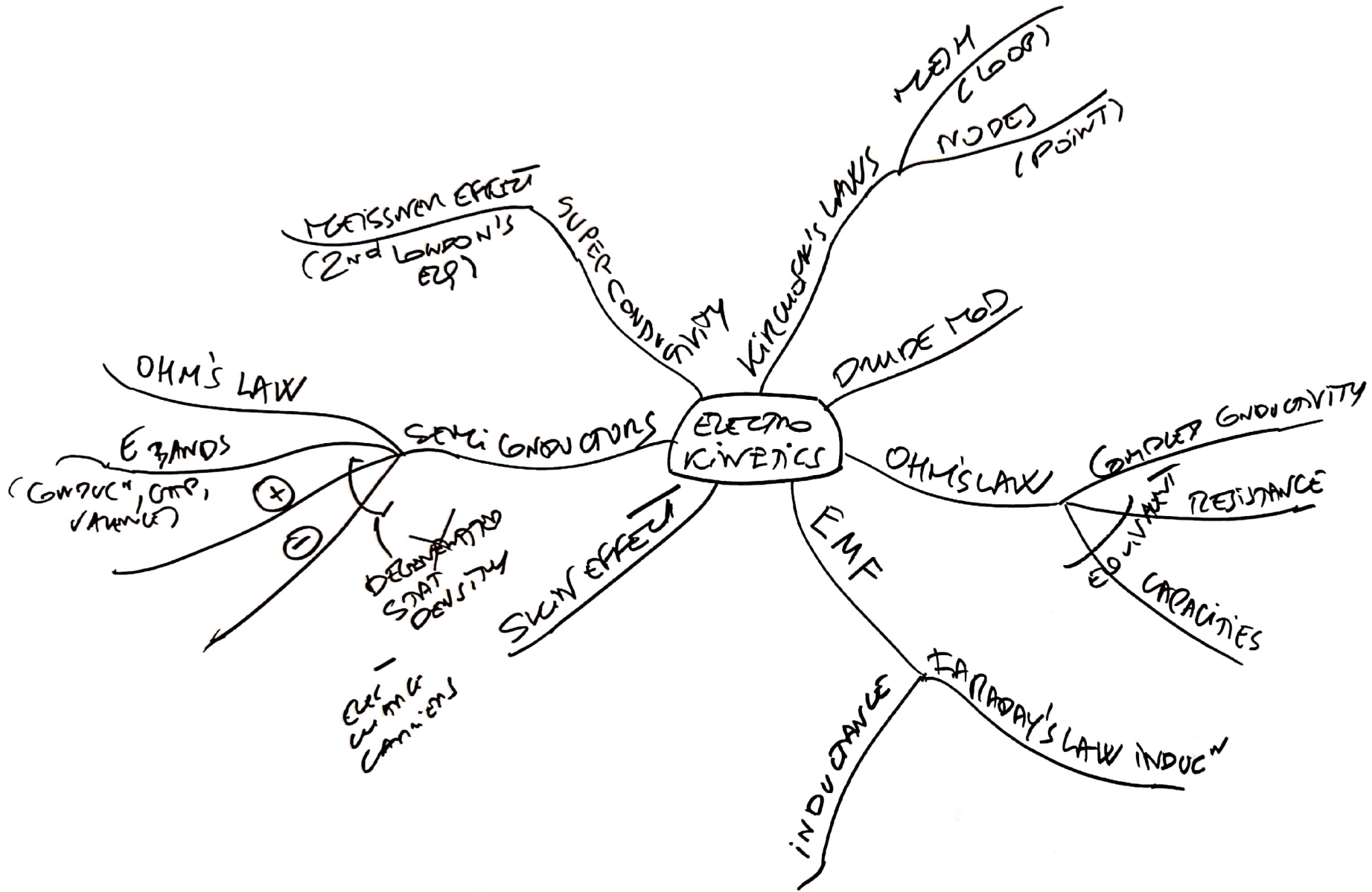


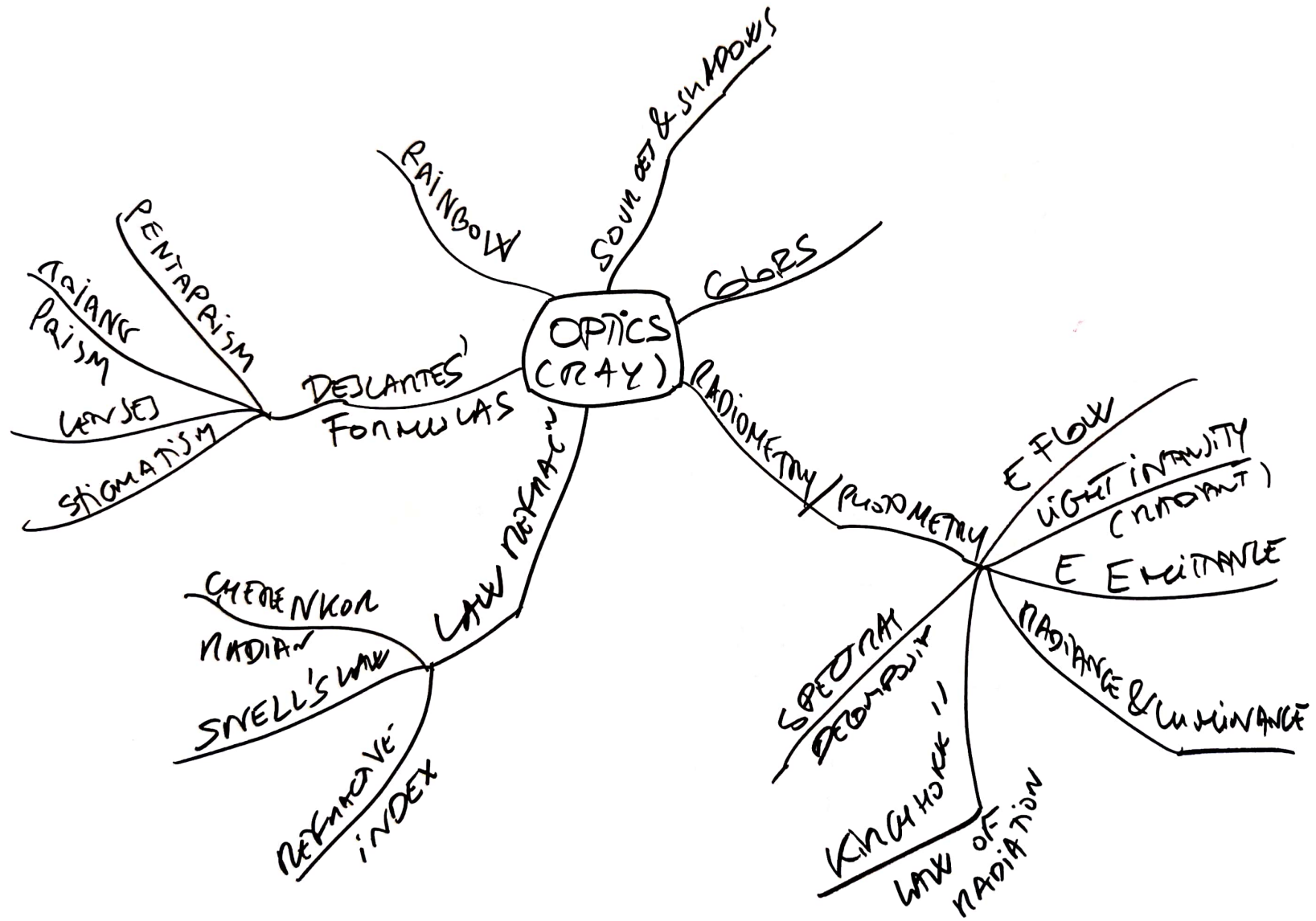


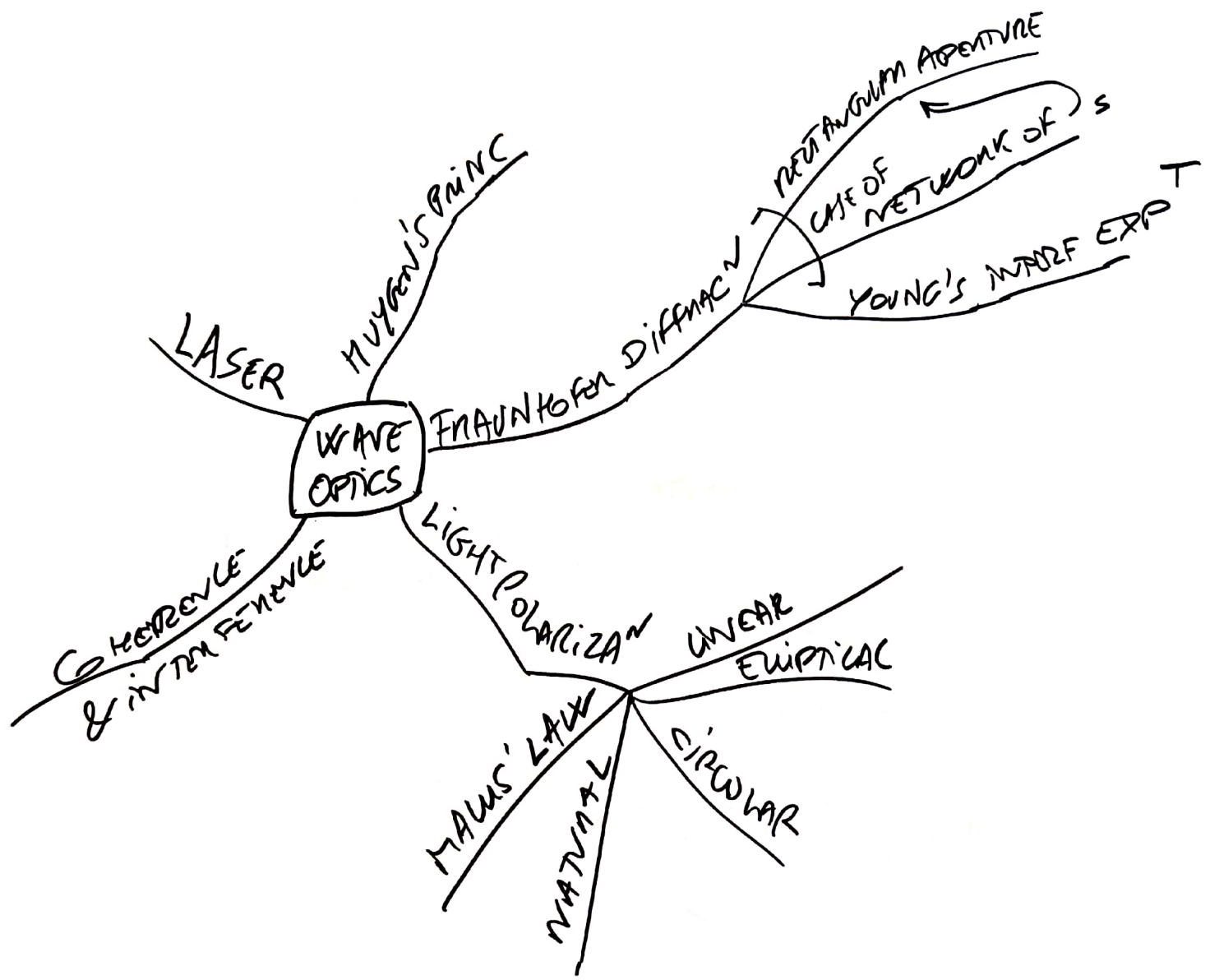


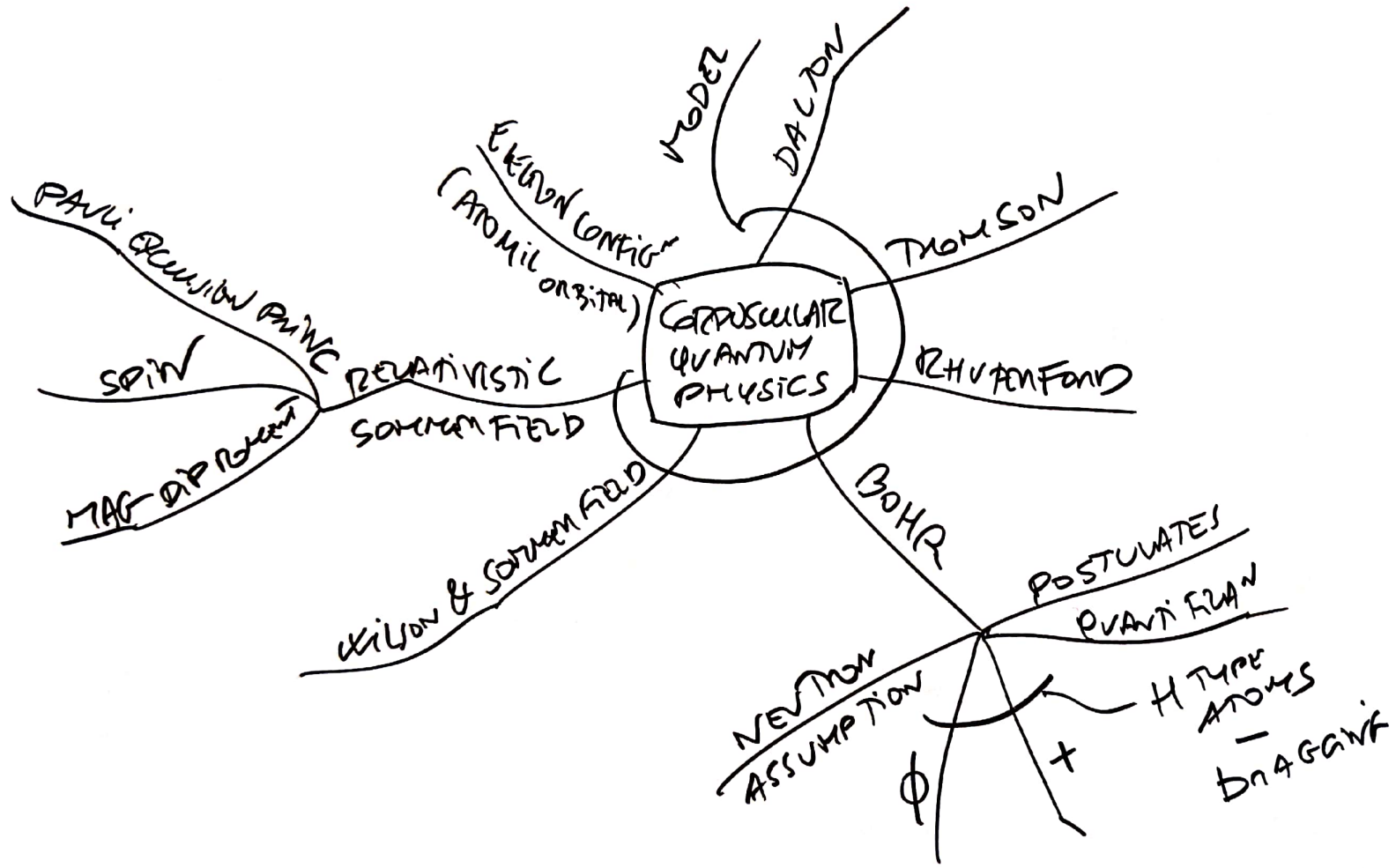


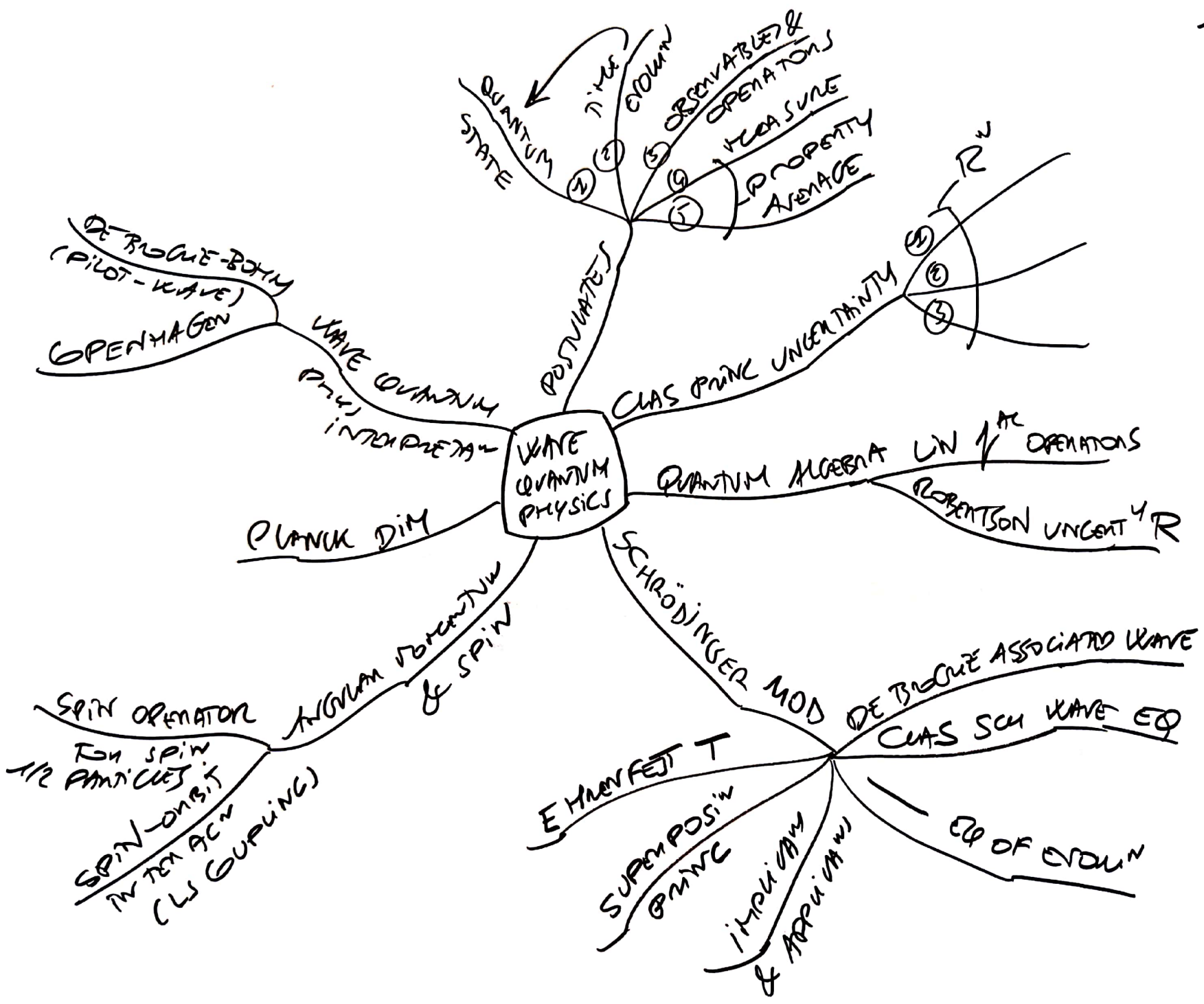


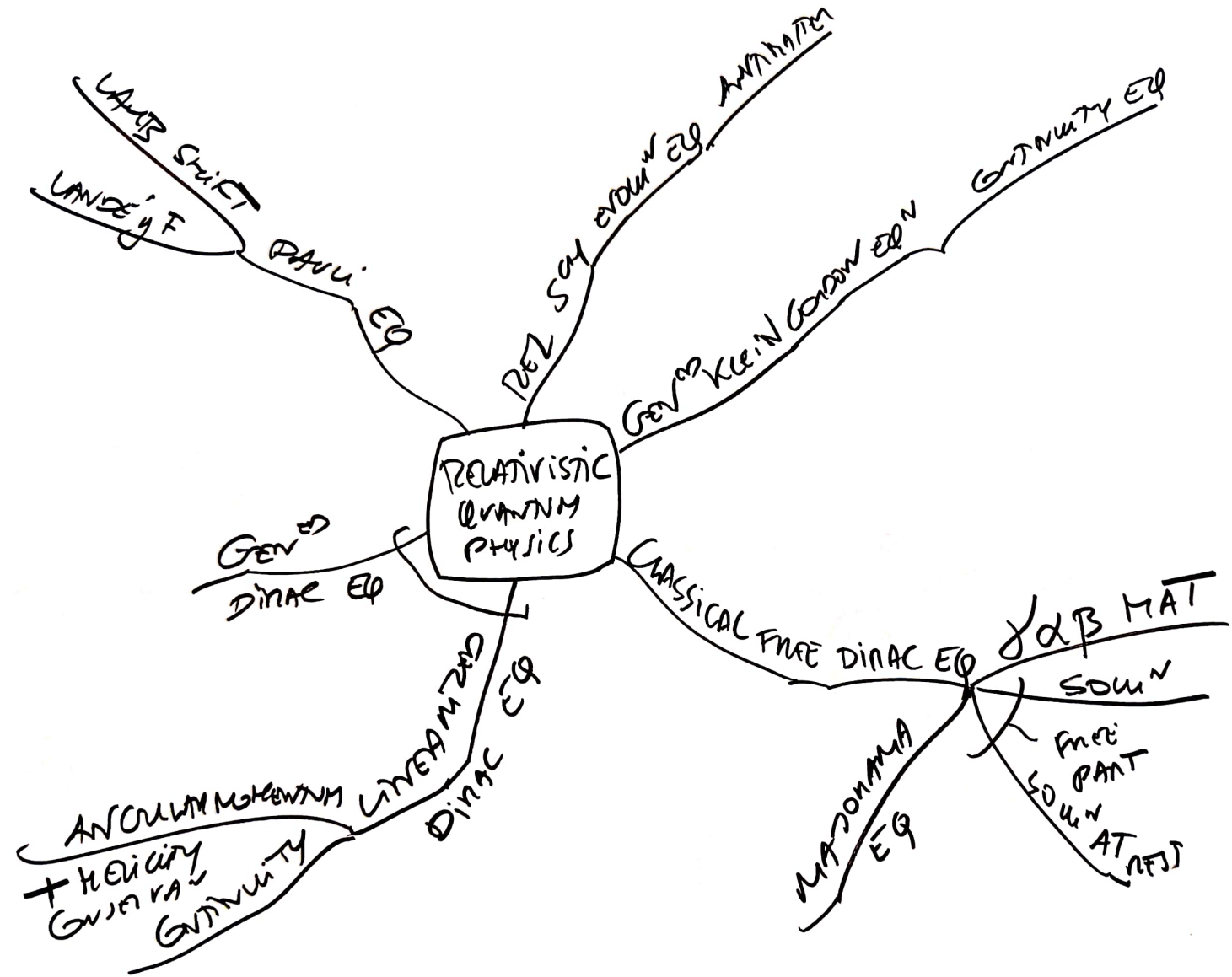


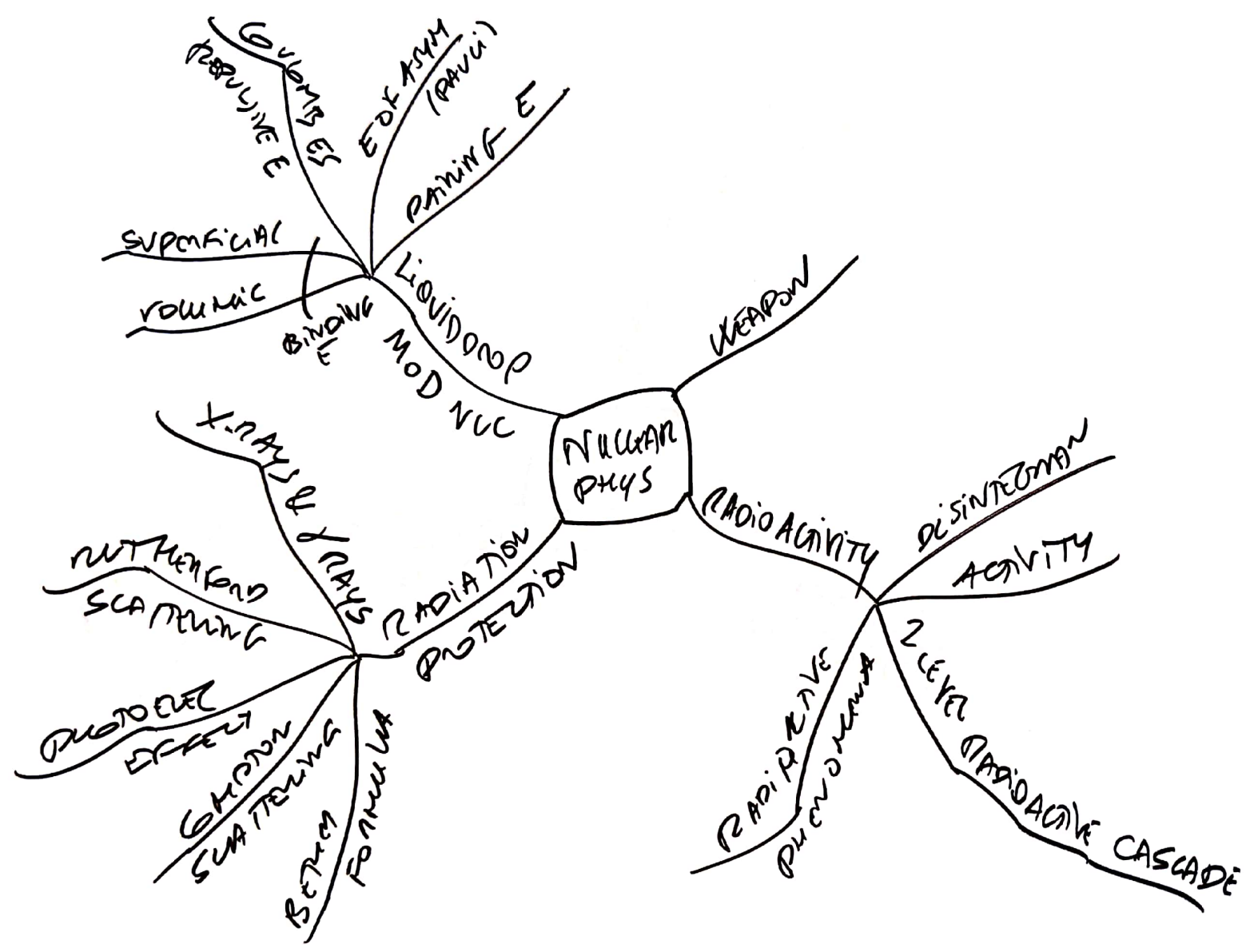


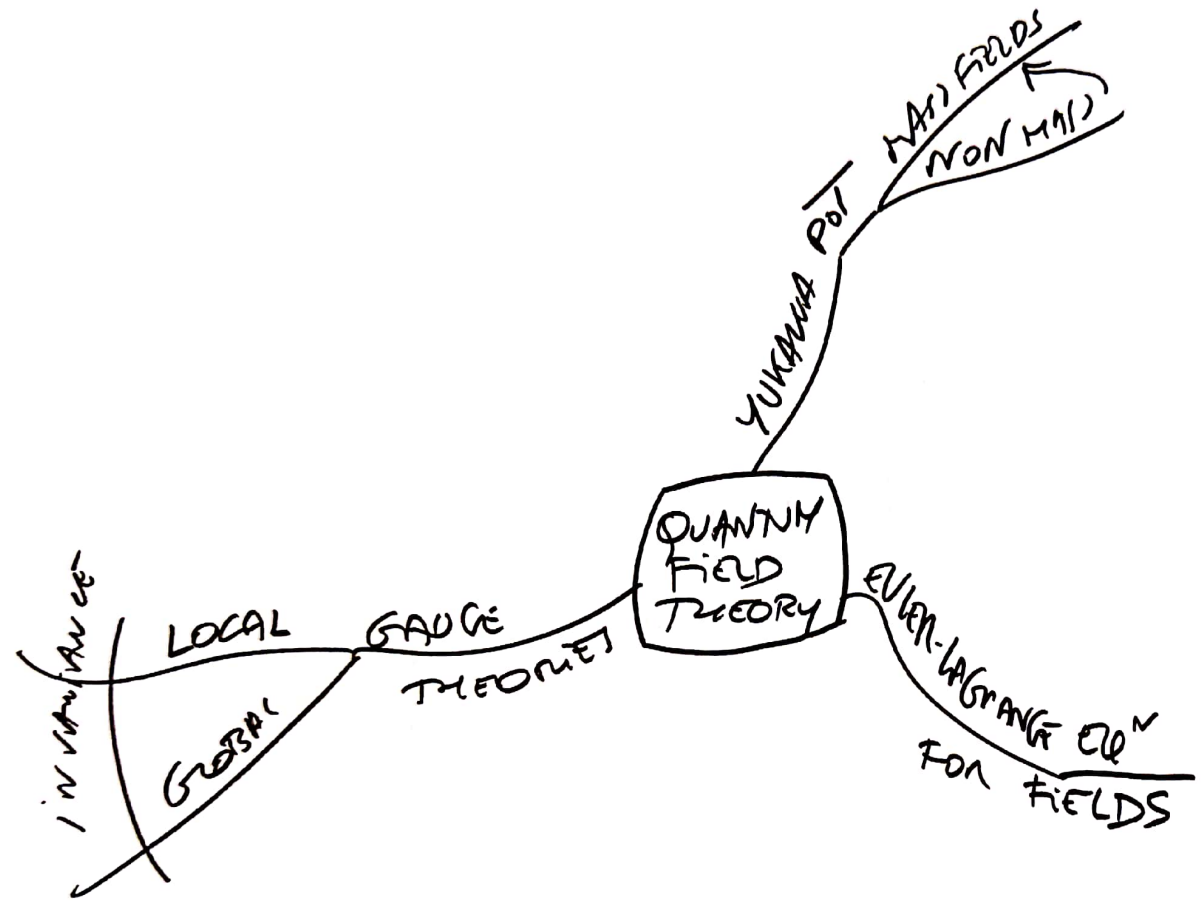


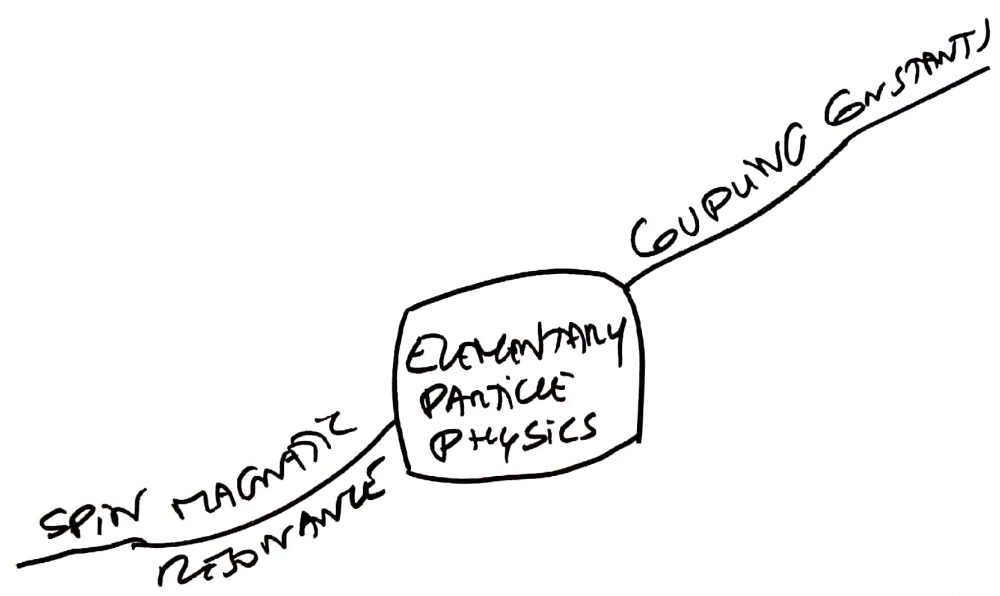


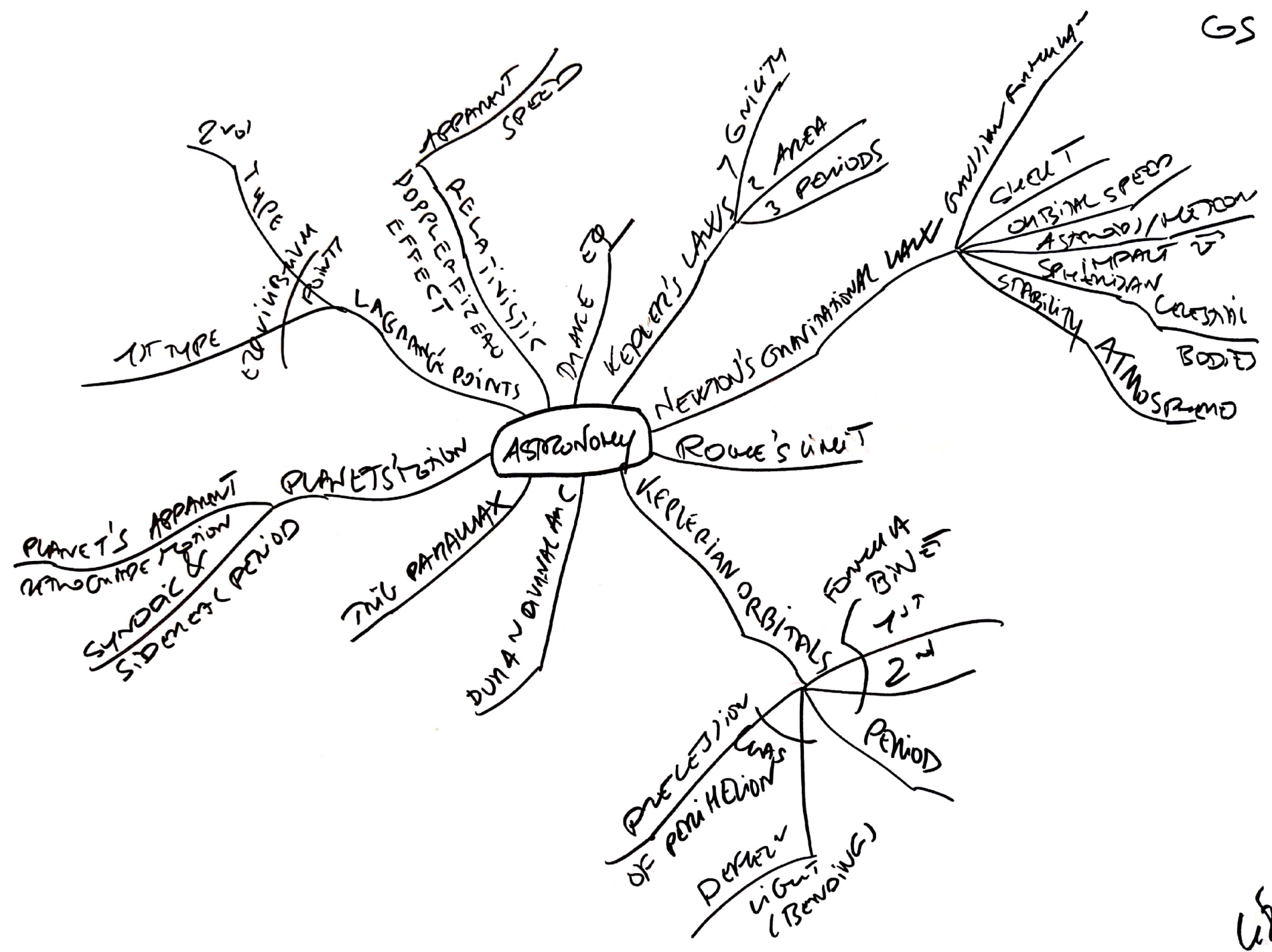




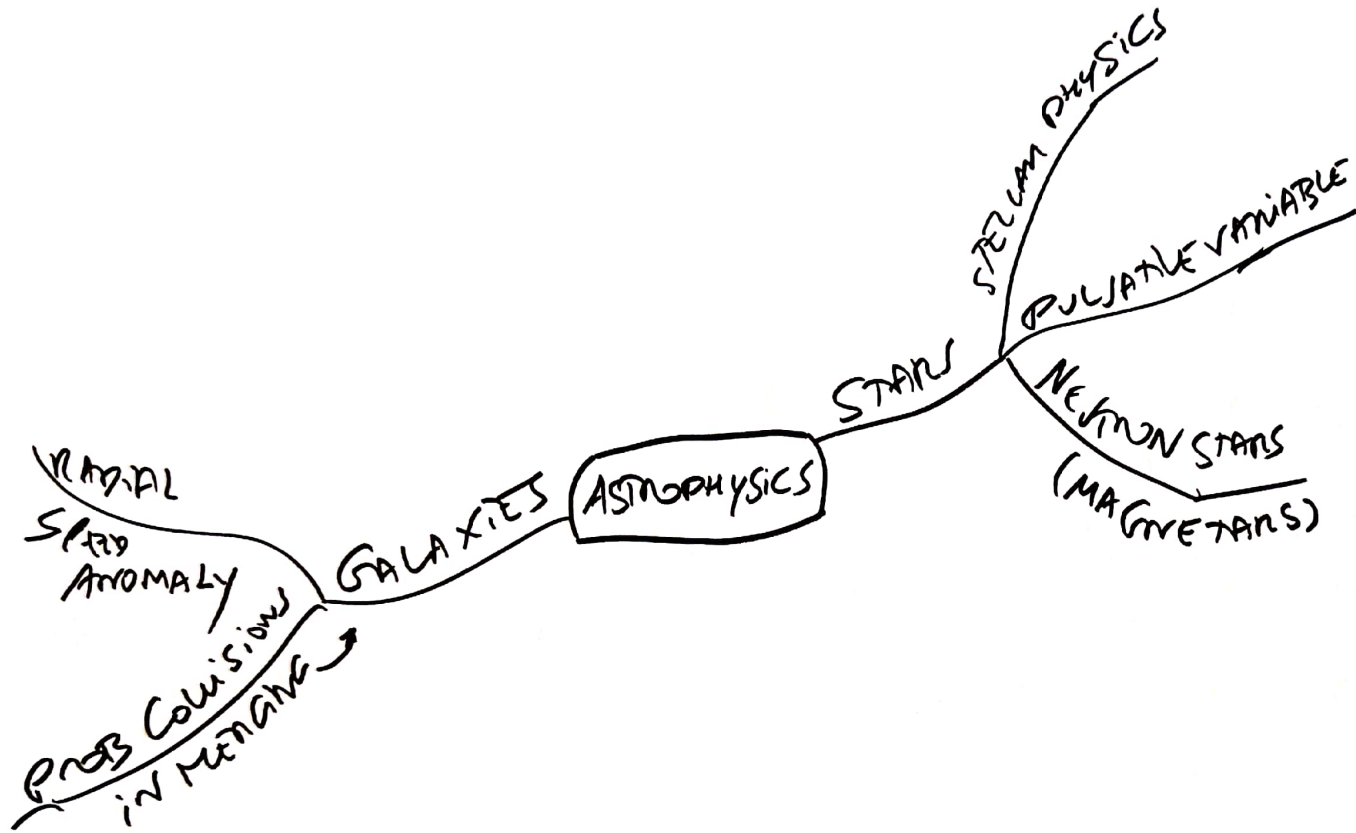




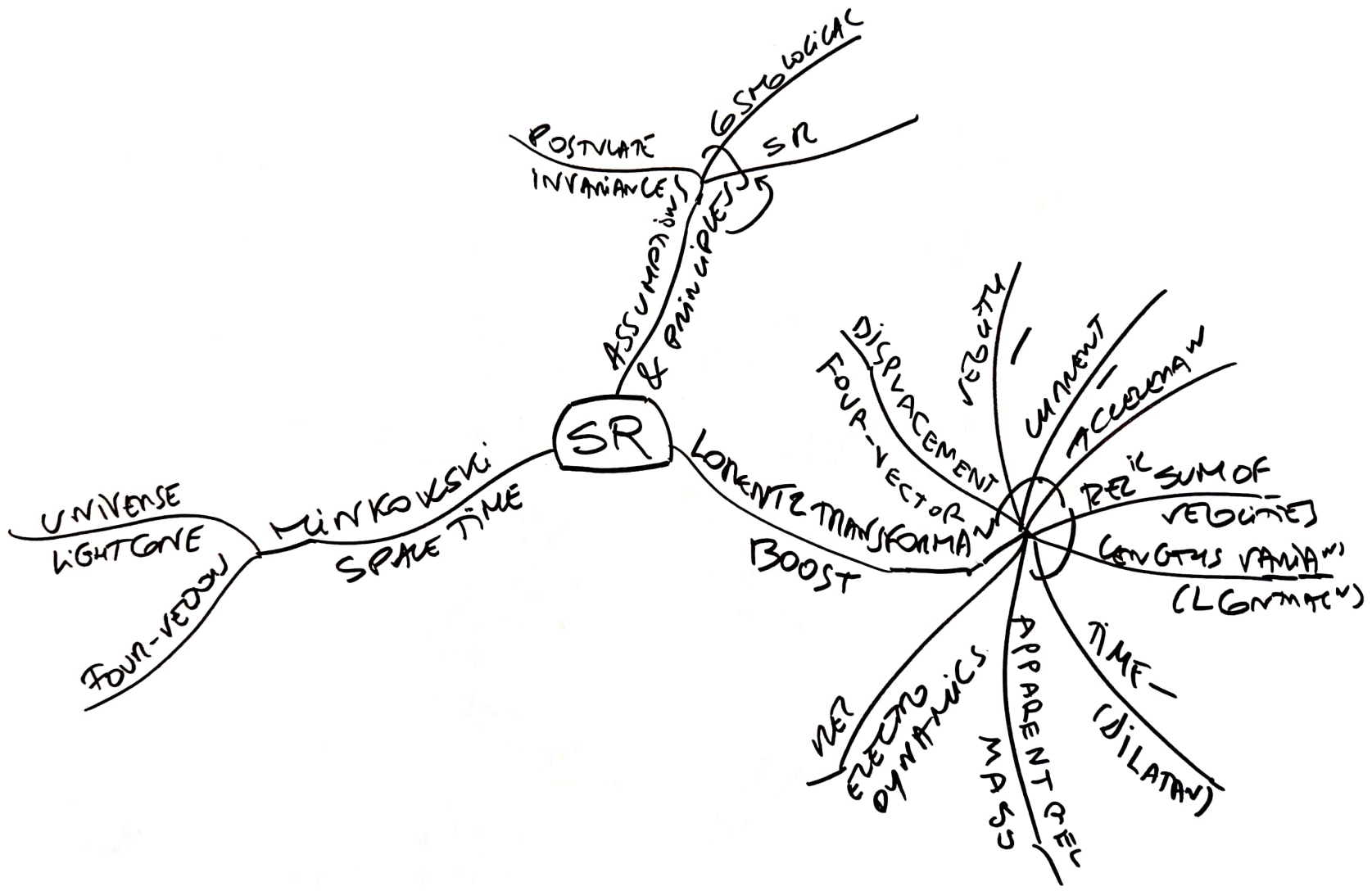


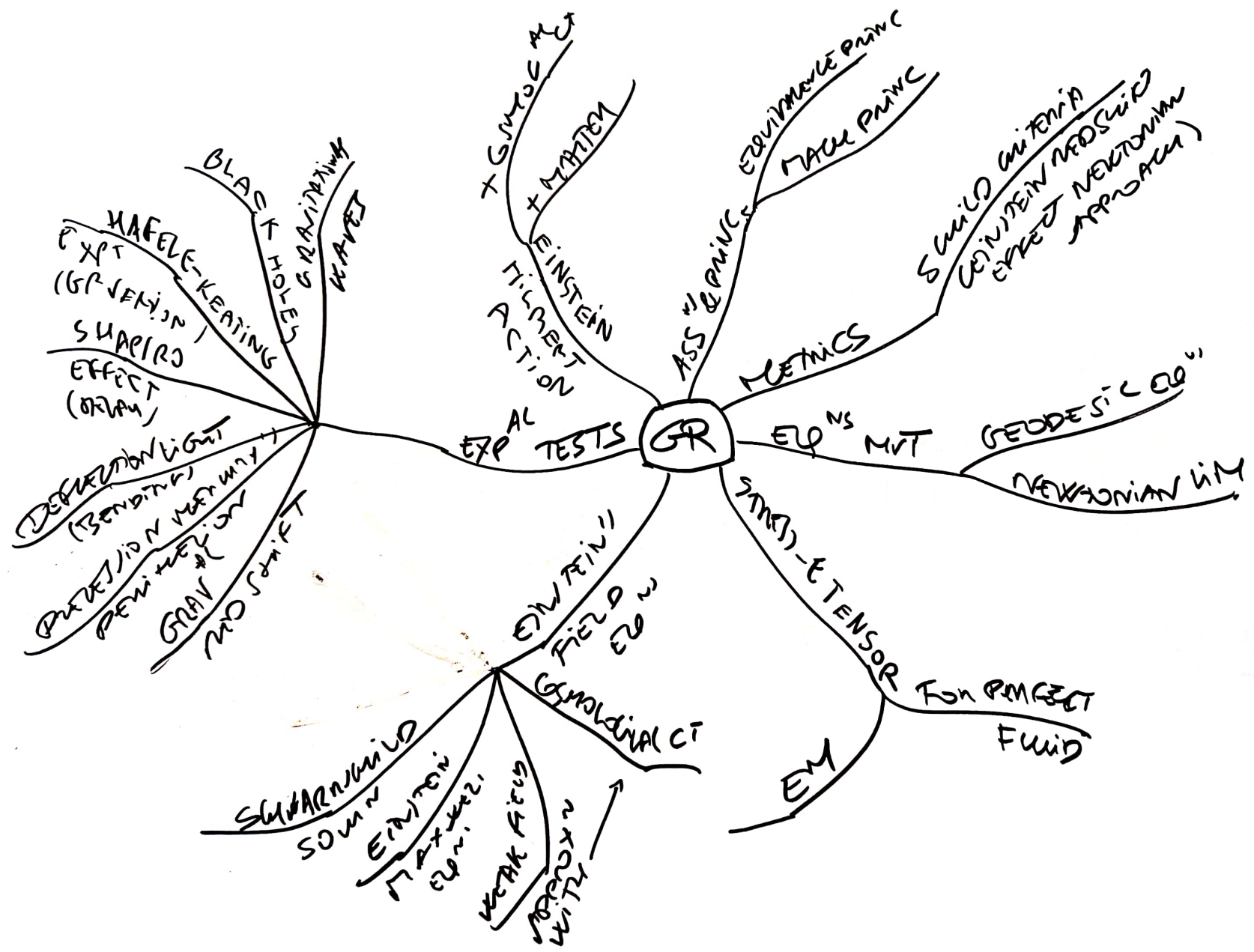


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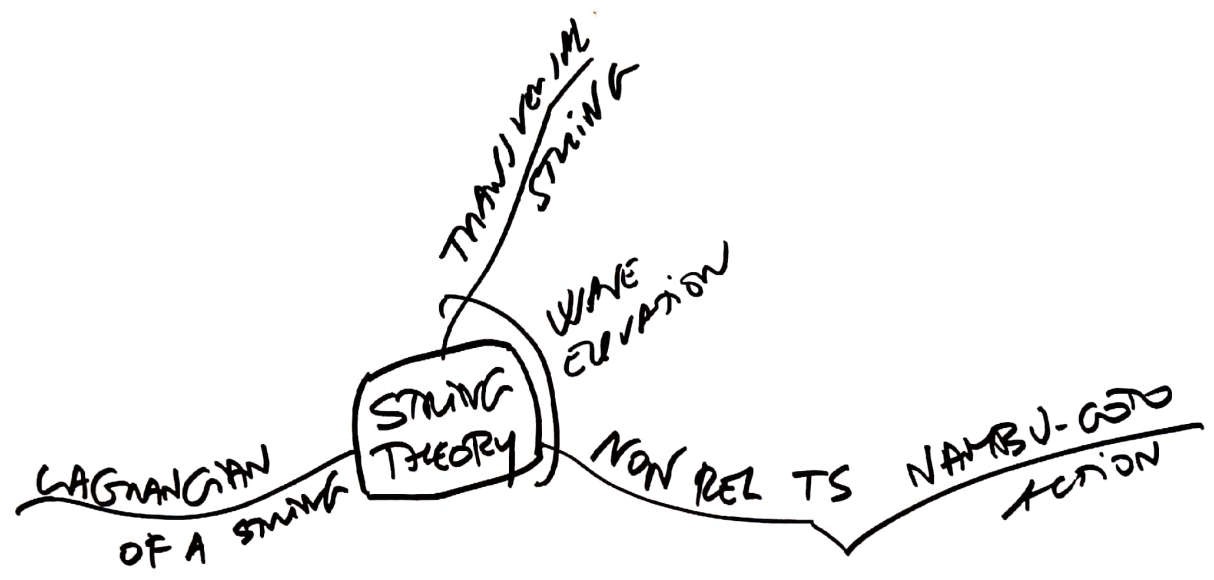


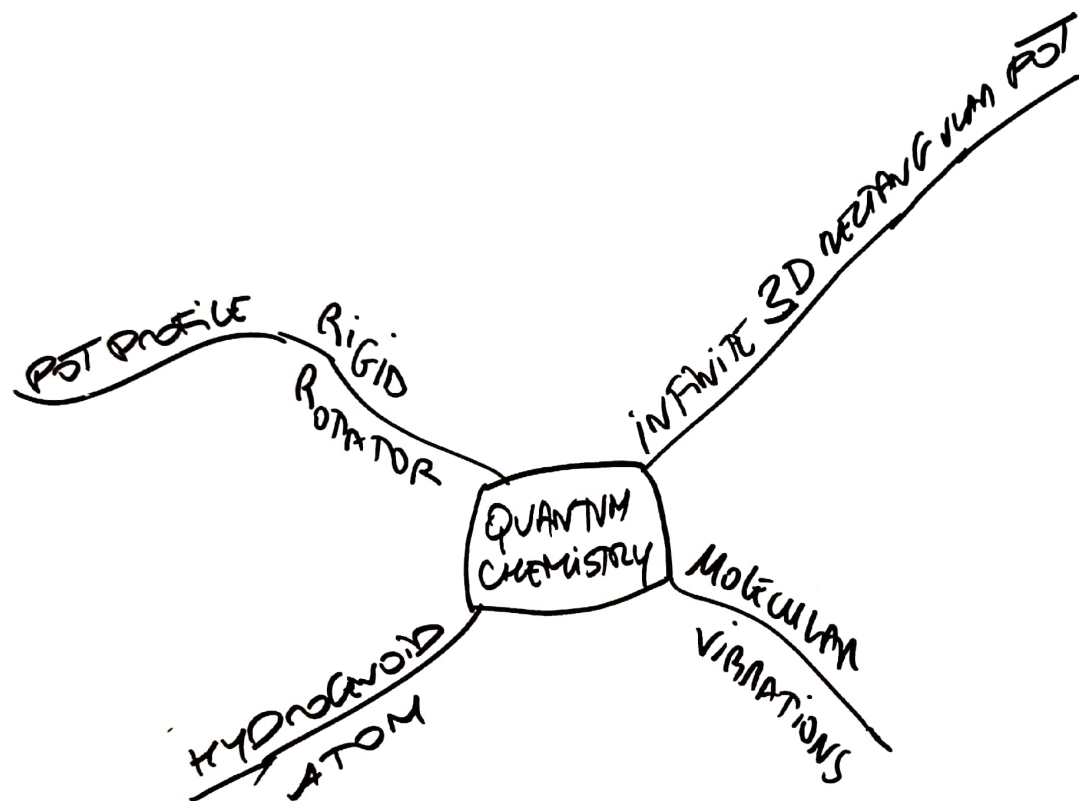
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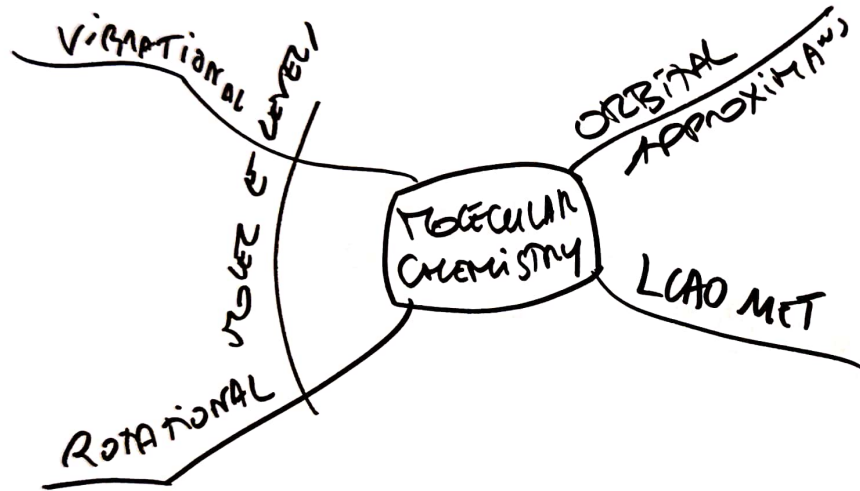


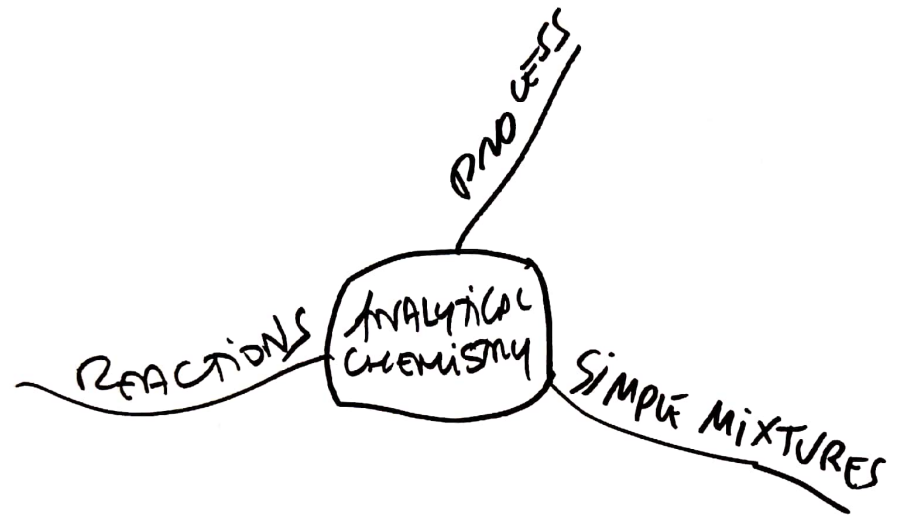


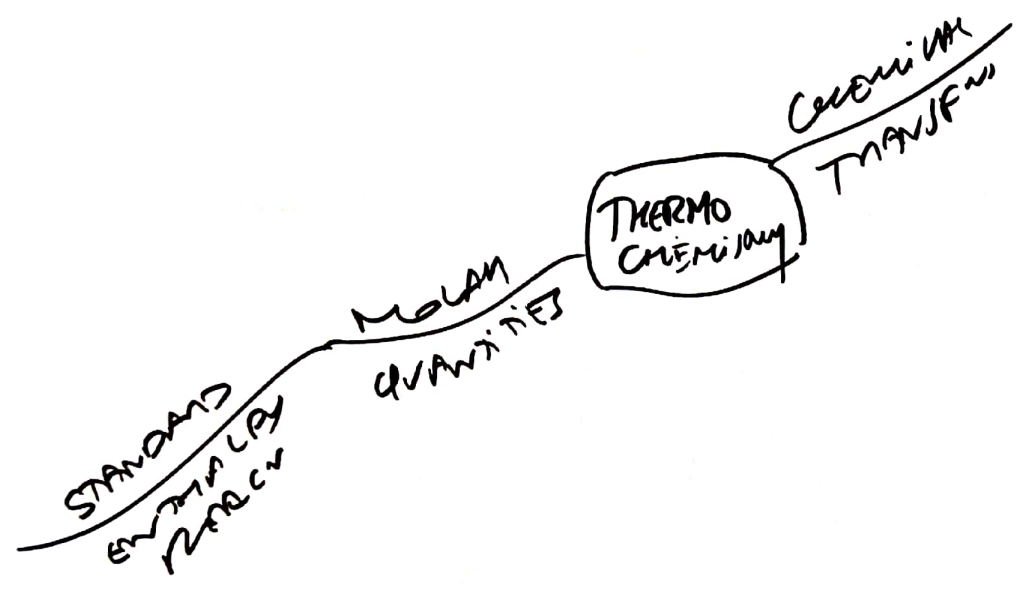


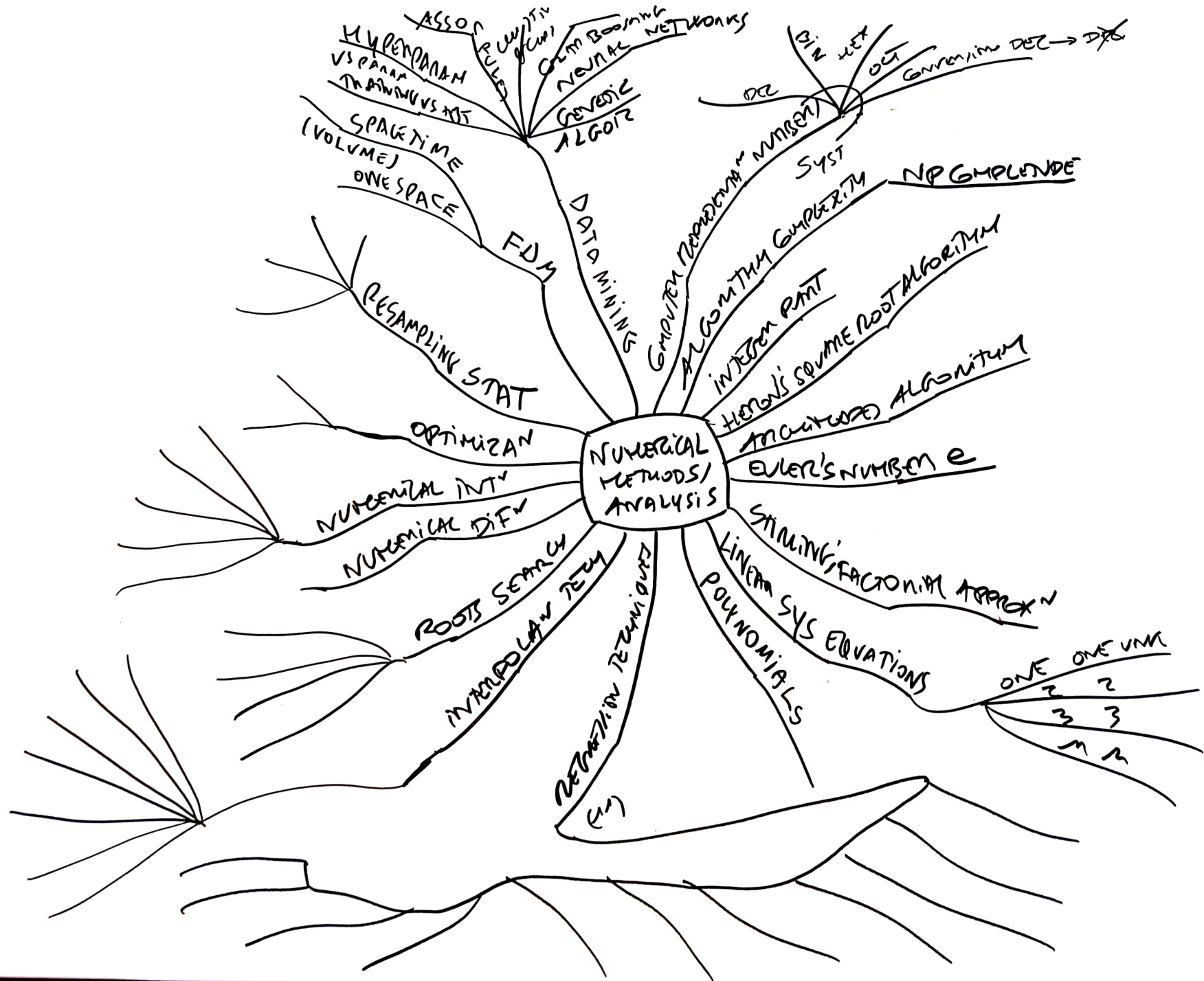




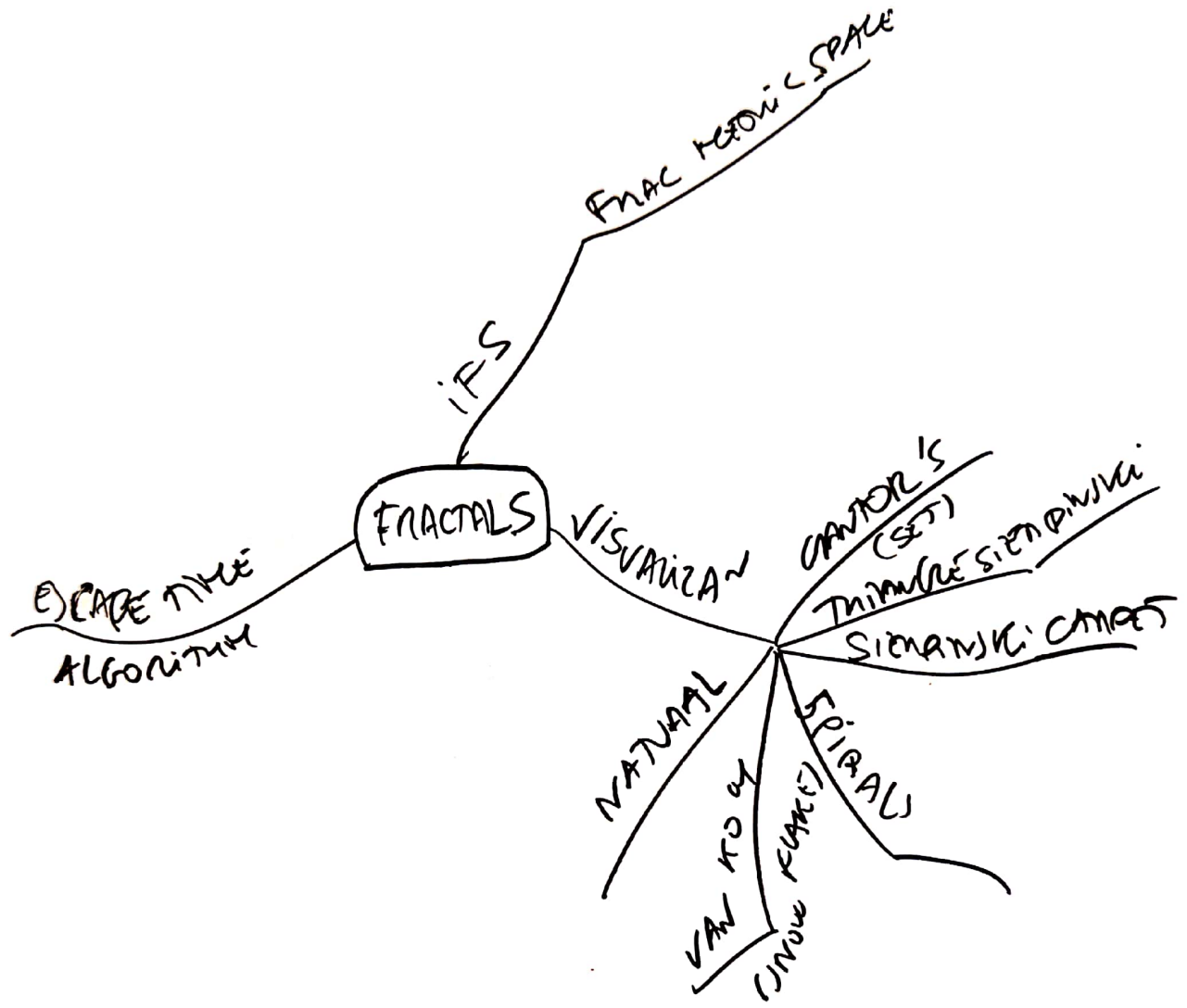


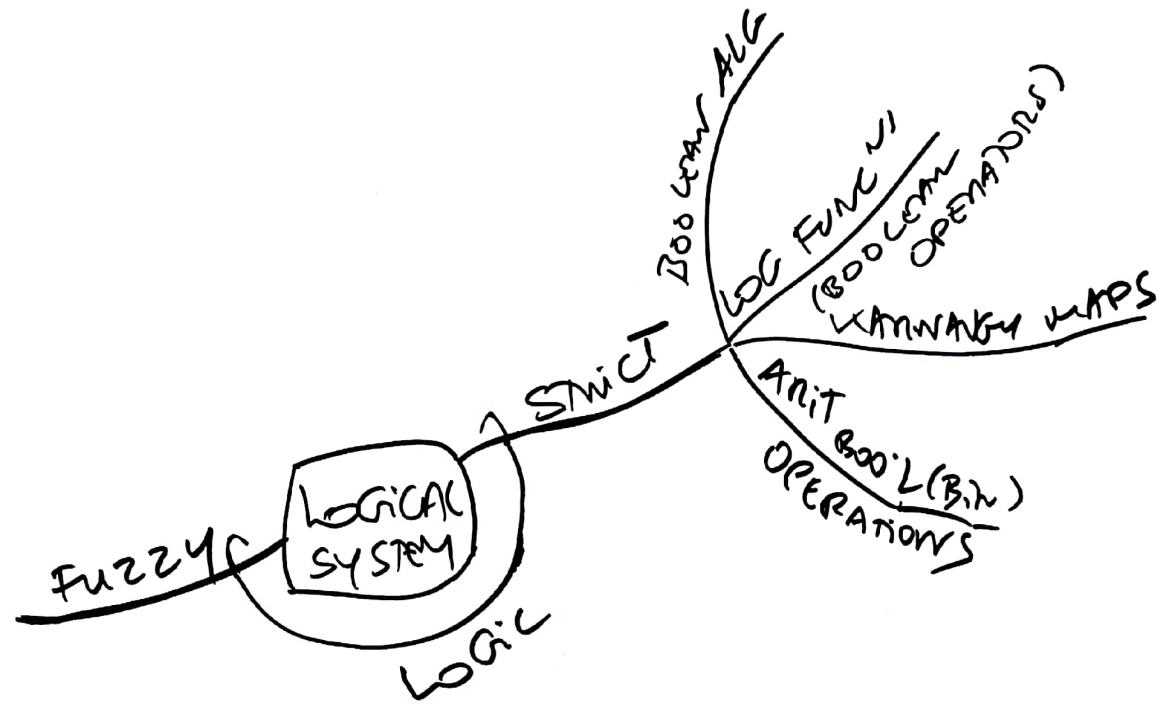


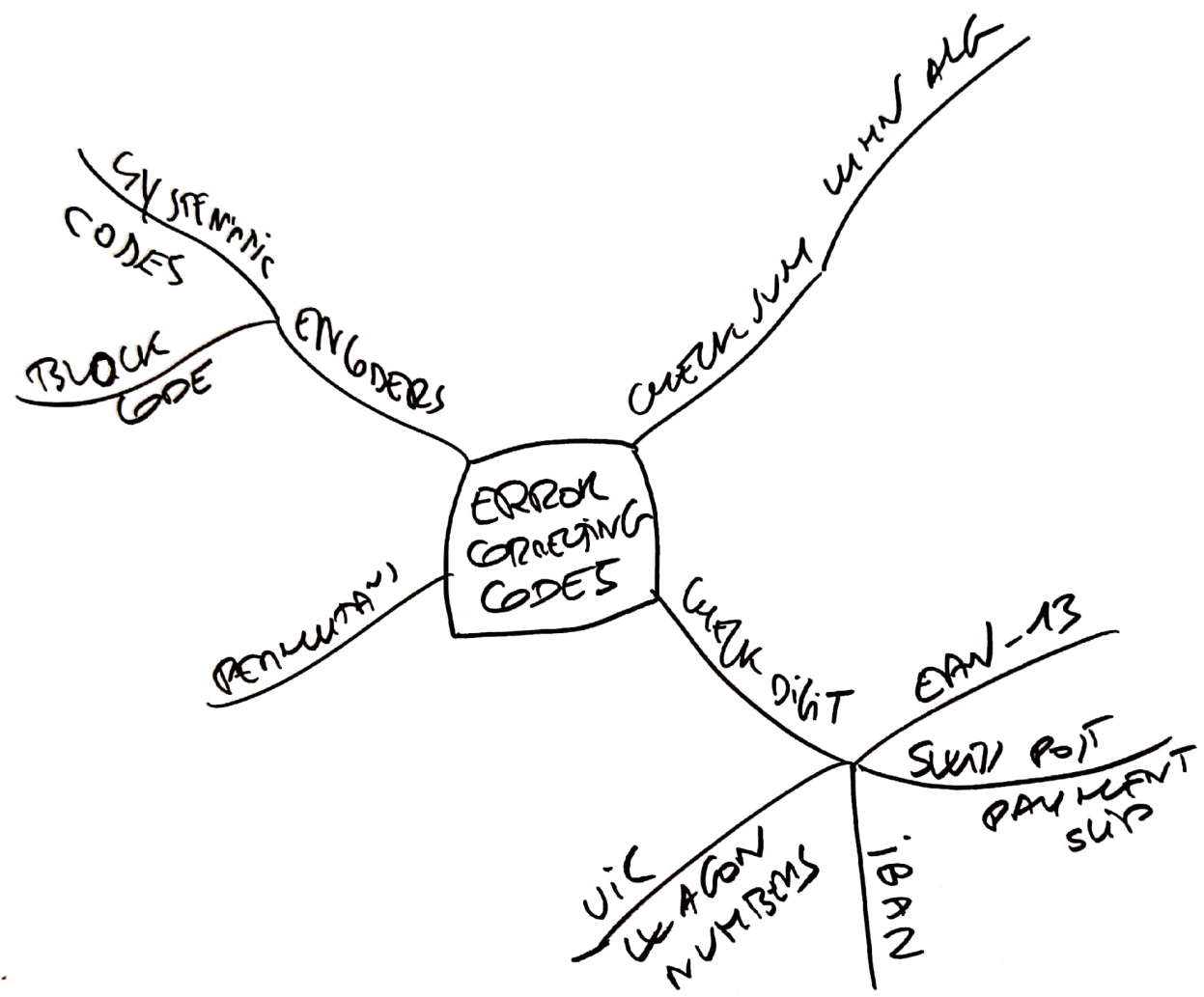


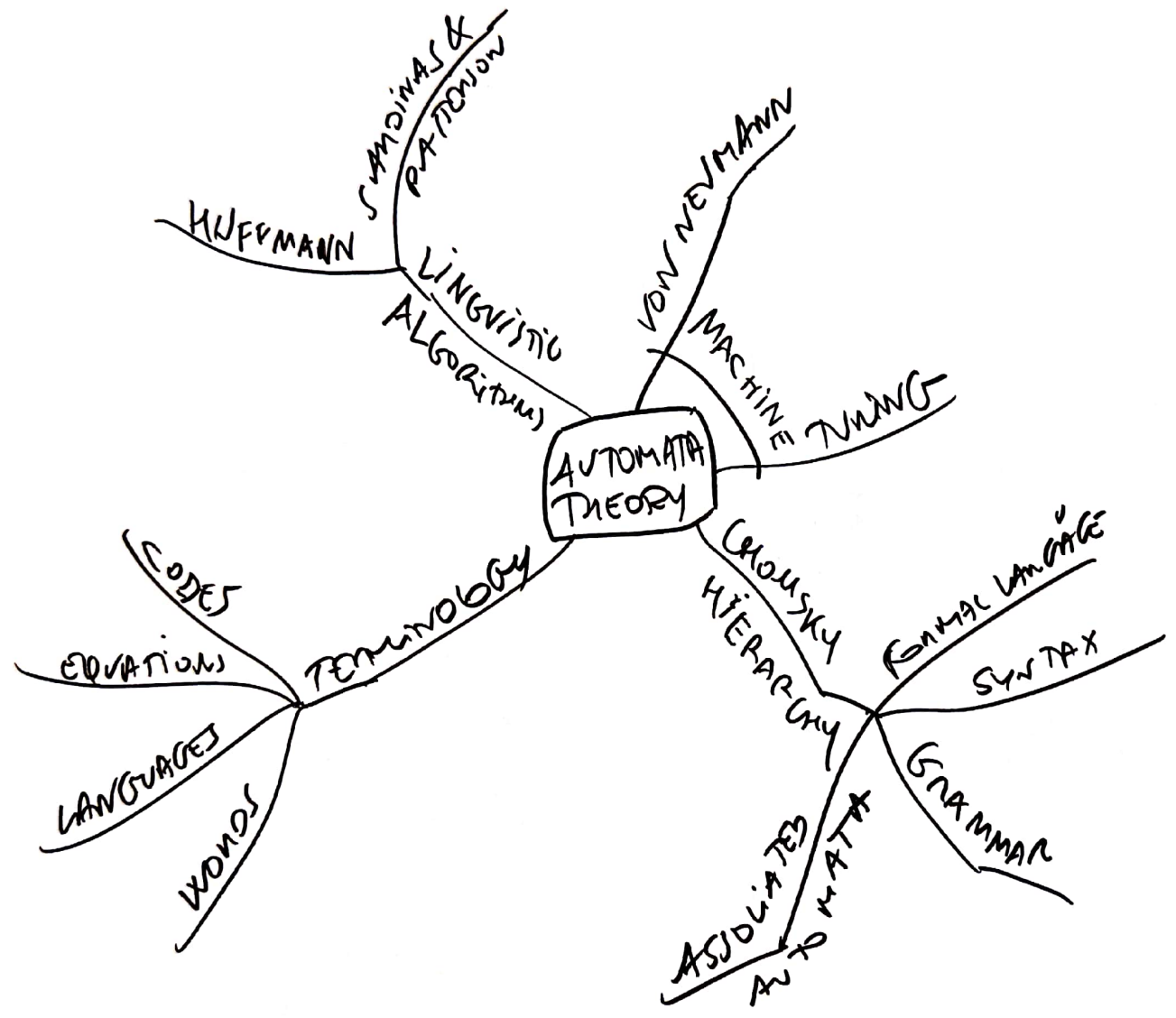


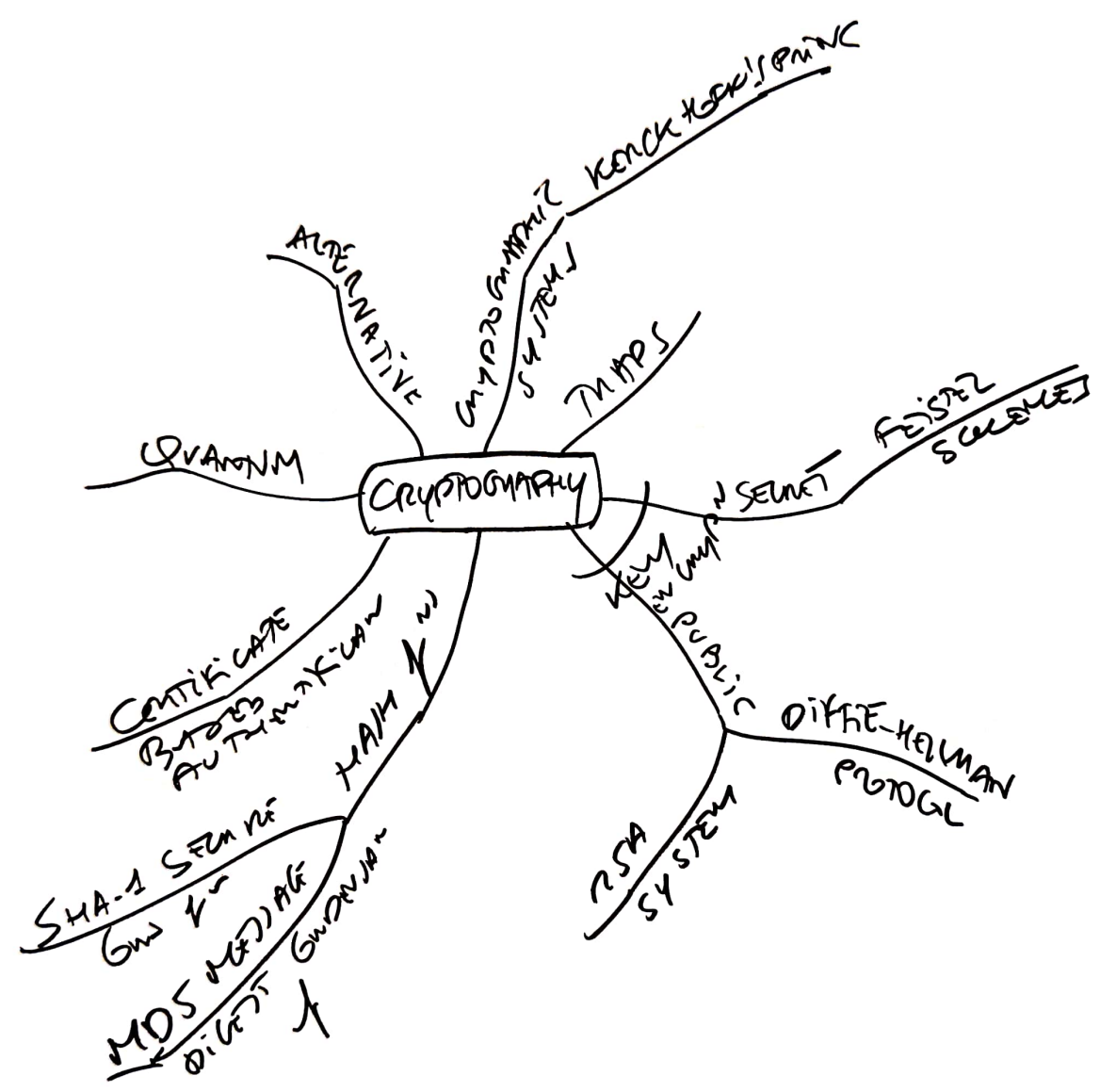
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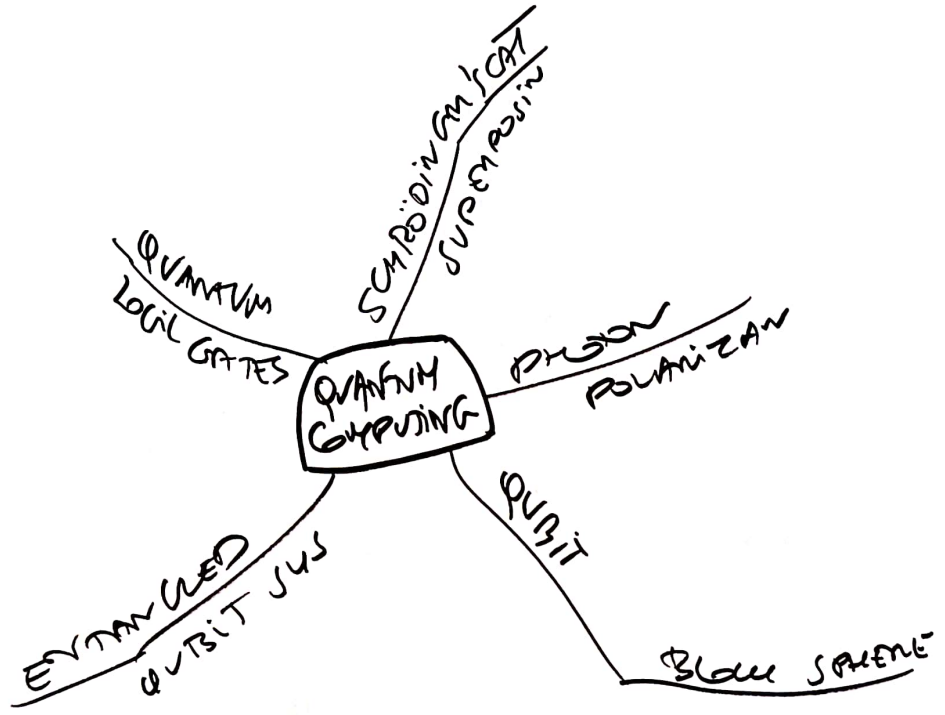


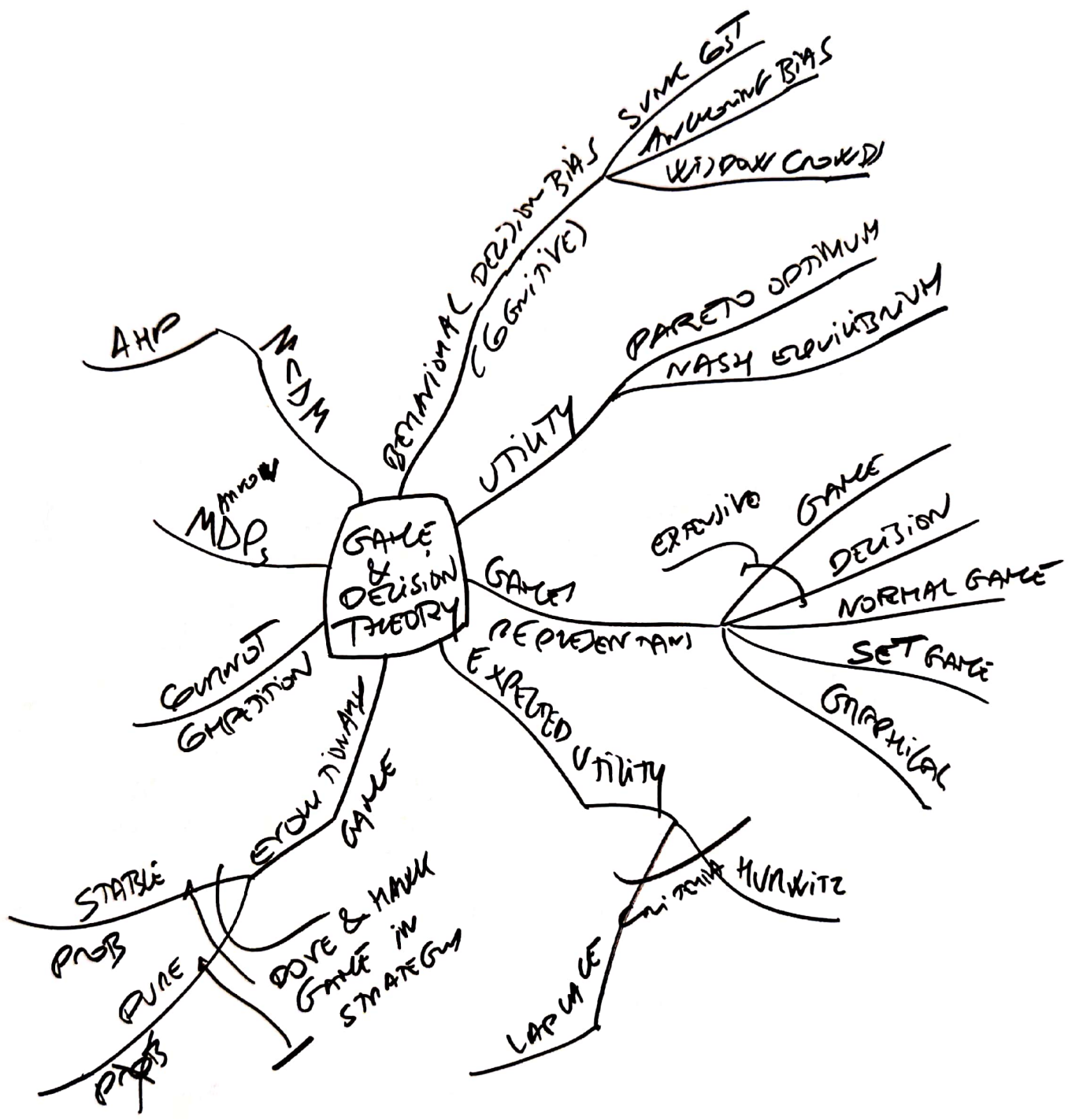


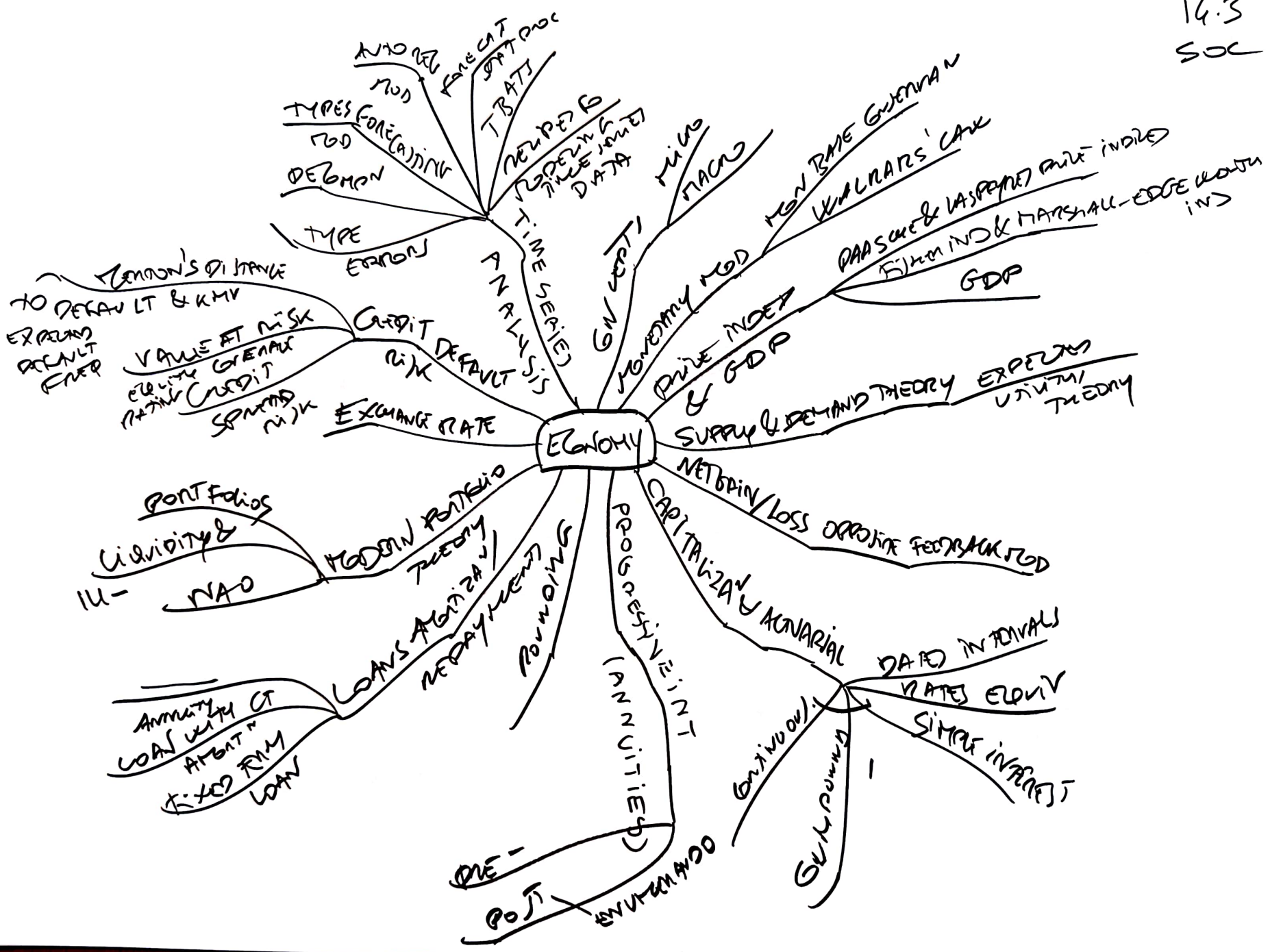




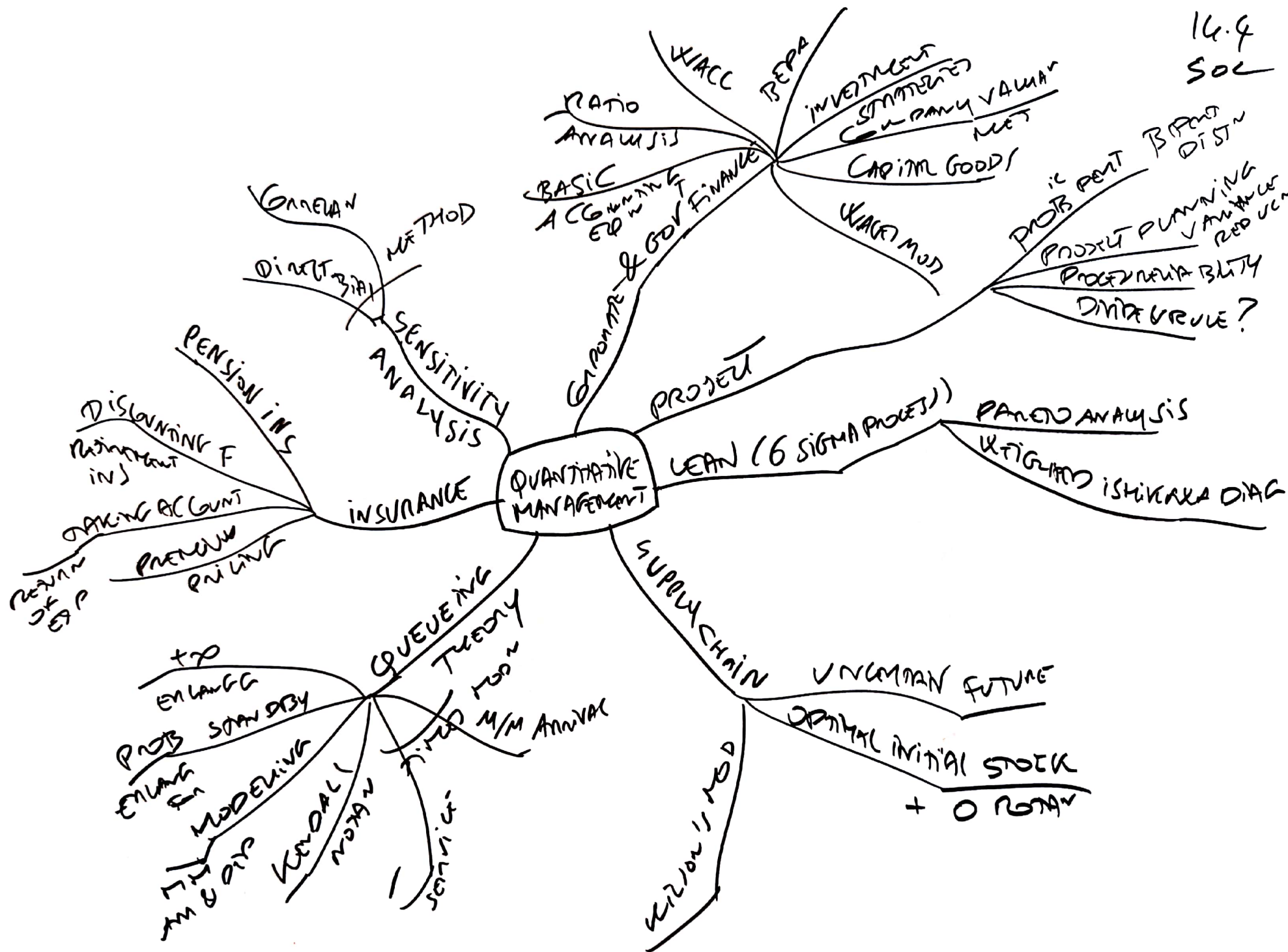
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