CEREBRAL CORTEX

54
+ 6
= 60 pages

ANAT CEREBRAL 2 HEMISPHERES

OVERVIEW

APHASIA SQUARE

K BRODMANN 1909

PYR & GRANN

CYTO ARCH

HISTO ORG

ASSOCIA

LONG FASC

L F O E

CINGULUM

DEEP NUCLEI

CEREBRAL CORTEX

SUBCORT F BUNDLES

COMMISSURAL

PROJECT I CAPS

PRIMARY & ASS

MOTOR

LESION

SUP MOT COMPLEX

F. & RD SUP

SUP NOT COMPLEX LES

ANAT

α & π

GENU

CALLOSUM

SENSORY

VISUAL

70

AUDIT

70 ASS

LES

ASS

CORTICAL PLASTICITY

LATERAL INH

LES

ASS LES

- MED REPRESENT
- IN BILATY
- LATERALIZ
  CLIN MANIF

LANGUAGE
ATTENTION
SPATIAL
ORIENTATION

CONTENTS & SUMMARY

ANAT CEREBRAL 2 HEMISPHERES (central node)

CEREBRAL CORTEX

BLOOD SUPPLY OVERVIEW
- PERFUSION AREAS
- DEEP
- APHASIA SQUARE
- STROKE CLINIC
- MASON JUNG ZONE B
- CIRCLE WILLIS
- MCA
- ACHOA
- PCA
- ACA
- FAC DEFICITS SEEN IN CVA VASC IN FAMILY

SUBCORT F
- HISTO ORG
- PYR/GRAN M
- CYTOARCH
- K BODMANN 1909
- LONG F.O.F
- CINGULUM
- FASC
- ASSOCIA

FUNCTIONAL AREAS
- SEX DIFFERENCE
  - CONTEX
  - WM TRACTS
- NEW CONCEPT
  - MIRROR NEURON SYSTEM
  - SOCIAL IN FEMALE
  - CLIN SIGNIFICANCE
  - EMPATHY
  - NOT COMMING
- LANGUAGE
  - MODERN
  - CLASSICAL
  - CONCEPTS NEUROBIO
  - ARCUATE F LES
  - WERNICKE
  - BROCA
  - CURRENT NEUROSCI
- HETEROMODAL ASSOCIATION
  - UNIMODAL ASSOCIATION AREAS
  - GAGE
  - OTH
  - OLF
  - T
  - P
  - F
  - N
  - LES INV
  - SIZE INV

- PRIMARY & THEIR
  - PRIMARY & ASS
  - MOTOR
    - LESION SUP NOT COMPLEX
    - F & RD SUP
    - ANAT
    - I CAPS
    - PROJECT
  - SENSORY
    - VISUAL 1°
    - LES ASS
    - AUDIT 1° ASS
  - CORTICAL PLASTICITY LAT FUNCT INH
    - LES
    - ASS LES

BUNDLES
- COMMISURAL
- α & ΙΙ
- CORP CALLOSUM
- PROJECT

DEEP NUCLEI

Blue notes (right):
- REP/REPRESENTAT N BILATY
- LATERALIZA CURV NORMAL
- LANGUAGE
- ATTENTION SPATIAL
- ORIENTATION

MAJOR GYM KOWERSTATION

OVERVIEW

ANATOMY CEREBRAL HEMISPHERES

SUBCORTICAL FIBER BUNDLES

F & BD SUPPLY

PROJECTION
- ANAT IC F
- α,δ,β
- II
- INTERNAL CAPSULE
- GENU
- RADIATA
- WITH
  - SUB CORT
  - AS WELL AS BS & SC STM

COMMISSURAL
- α & II
- CORPUS CALLOSUM
- MAJOR (FORCEP)
- MINOR
- GENU
- SPLENIUM
- CROSS MIDLINE & CON AREAS IN 2 HEM
- CONTRALAT FUNC AL

ASSOCIATION
- WITHIN ONE HEM
- Long Fasciculi
  - SLF
  - ARCUATE F
  - IFOF
  - UNCINATE F
- CINGULUM
  - CINGULATE
  - PARA HIPPOCAMPAL GYRI
  - LIMBIC LOBE

Sulci & Gyri

MICROSTRUCTURE Fm

HISTO ORG

NEO
- LAYERED STRUCTURE
- CONNECT AREAS GRAY WITH EACH OTHER & WITH OTH BRAIN AREAS

HI Gran Force

VARIT MASORITY
6 LAYERS

- NEOCTX
- PALEO — 3 OLF BULB
- ARCHI — HIPPOCAMPU

2 MAIN TYPE PYR
PYRAMIDAL & GRANULAR NEURON

CYTOARCHI

- GRAN = STELLATE
- GRANULAR
- AGRAN
- GRTH
- INTER NEURONS

BRODMANN 1909

GLASSER 2016

FUNCTIONAL AREAS (central node)

MOTOR
- PROJECTS TO CONTRALAT LMN
- TRACTS
  - BUL
  - CO.
  - SOMATOT
  - HOMUNCULUS
- MOSTLY SYMMETRICAL EXCEPT FEW PRIMARY
- SMC
  - LES
  - SUPPLEMENTARY
  - LES → APRAXIA
  - DIRECT CONN
- BDMN R & L

SENSORY
- POST CG
- STT
- PCML
  - ALS
  - PCML FROM GRMA
- LIMBIC
  - FLOW
  - SOMATOT
- CORTICAL PLASTICITY
- LATERAL INHIBIN
  - LES
  - ASS → TACT AGNOSIA
  - ASTEREOGNOSIS

VISUAL
- 1ST TRACTS SPECIAL SENSE
- CALCARINE
  - SULCI
  - OCC LOBE
- LGN
- OPT RADIATION
- RETINOTOP
- LES → VIS AGNOSIA

AUDITORY
- PRIMARY
- ASS
- MGN
  - LES
- STG
  - HESCHL GG
- MGN TONOT
- ASS

PRIMARY & THEIR UNIMODAL ASSOCIATION AREAS

HETEROMODAL ASSOCIATION — MAJ PAM CORTEX

LANGUAGE
- DANCE ≠ RGL
- MAJ RIGHT HANDED & MOST LEFT → L DOM
- DETERMINED BY LOC LANG AREA
- **CORTEX**
  - WM TRACTS
  - SEX DIFFERENCES
  - MIRROR NEURON SYSTEM
- **CLINICAL SIGNIFICANCE**
  - EMPATHY
  - MOTOR
  - LEARNING FN
  - 1° & ASS
- **MODERN**
  - SEMANTIC PROCESSING
  - MULTI LANG
  - CONDUCT
  - DYSARTHRIA LES
  - APRAXIA
  - ARCUATE FASCICULUS
  - WERNICKE
  - BROCA
    - UNDERSTAND
    - PRODUCT
    - LES
  - CONTRALAT NEGLECT ID
- **CLASSICAL**
  - PROSODY
  - ARCUATE F
  - PROSOPAGNOSIA
  - AGNOSIA
  - FUSIFORM GYRUS
  - LES
  - NON DOM HEM
  - FN
  - CONTRALAT NEGLECT ID
  - HIGH ORDER PROC INTEGRATE
  - INTEGRATE VOLUNTARY & INVOL

TEMPORAL

PARIETAL

FRONTAL
- DA NE SEROTR NORADRENO INN
- PERSONALITY
- WM
- FN
- SIZE
- [EAGE]
- PFC
- LES
- ATTEN8
- L & M POSITION NOT REL TO FS

OTHER
- TASTE INSULA
- OLF
- JORDAN'S ENTORHINAL TEMP LOBE

Blood Supply mind map

- CVA / CAJE? STROKE CLINIC — ACA INFARCT / APHASIA SQUARE
- ICA AWAS
  - VBS
  - ACA
  - MCA
  - PCA
  - END AA / WATERSHED AREA — FOC DEFICITS SEEN IN GM VASC INFARCT
- WILLIS

BLOOD SUPPLY

- PCA — PComAA O & LO?
- ACA — INTERHEMISPHERIC FISSURE / MEDIAL SIDE OF F? & P?
- MCA — LENTICULOSTRIATE AA / MOST LAT SF?
- A Chor A — BRANCHES DIRECTLY / DEEP SM.
- POSTERIOR UNITY / LENTICULOSTRIATE AA = DEEP BR
- TAIL CAUDATE / OPT TRACT / OP / IC
- HC

Scanné avec CamScanner

MAJOR GYRI FORE B

CINGULATE

PARA C LOBULE

G S

PRE CUNEUS

CUNEUS

FUSIFORM LINGUAL

PARA HIPPOCAMPAL

RECUS

UNCUS

G = GYRUS
S = SULCUS

F = FRONTAL
T = TEMPORAL
P = PARIETAL
O = OCCIPITAL
L = LIMBIC
_____
LOBES

> = SUPERIOR
M = MIDDLE
< = INFERIOR

C = CENTRAL
∢ = LATERAL

G S

POS

CC

T

OVERVIEW

MAJOR
GYRI
FORE B

G = GYRUS
S = SULCUS

F = FRONTAL
T = TEMPORAL
P = PARIETAL
O = OCCIPITAL
L = LIMBIC

LOBES

> = SUPERIOR
M = MIDDLE
< = INFERIOR

C = CENTRAL
⅃ = LATERAL

> FG

PREC   POST G

SUPRA MARGINAL]
> PG
ANGULAR]

M
<

ORBITAL PART OF

>
M
<

FISSURE

CINGULATE   PARA C GYRUS
C S
PRECUNEUS
CUNEUS

>

RECTUS
<

UNCUS

FUSIFORM   LINGUAL
PARA HIPPOCAMPAL

C S

F   P

T   O

MEDULLA   CBL

G S   POS

CC
T
⅃

A hand-drawn mind map with the following labels:

- LACD
- LONG DK TREE
- (H) SMALLY M PROCESSES
- (VI) ⊃ OUTPUT M ↗ SIZE & SHAPE
- 2 MAJOR
- ...NT III IV
- (1) PYRAMIDAL &
- ...STO RG
- GRANULAR NEURONS
- (2) ≡ STELLATE ← SMALLER DK TREE
- II IV ↓ A SHORTER
- REMAIN WITHIN
- MAIN INTRNEURONS
- DISTRIBN ≠
- NOT LARGE # PYR
- ...NS
- ...TIMIZED PROCESS SPR
- ↗ OUTPUTS
- SCNS
- GRANULAR
- COST GBULT
- NOT MANY GRAN
- LMN
- AGRANULAR

ANAT CBR HEMIS

HISTO ORG

RELATIVE DENSITY WITHIN
INVASIVE GUT MAN
i NEURAL CONNECTIVITY WITHIN & BETWEEN ↑
COMBINATION

FN - BRAIN MAPPING TEC
360/180/HEM

STR SPATIAL FUN
HISTO

CONVERGENCE FN ↑ WITH AREA

GLASSER 2016 *
NON ↑

CYTO
ARCHI TEXTURE
ONE FAR UNITS

PENFIELD
20 CENTURY ONLY

HISTO ORG — 1ST KARANE ≠
BRODMANN 1909

#FUN
↑ INP ↓ OUTP

ON COLUMNS
SPECIALIZED PROCESS STEP
INPUTS & 2 OUTPUTS

ONE APICAL D
TRIANG → ABSORB DK TREE

STR REGION MAIN OUTPUT
III IV

① PYRAMIDAL &
GRANULAR NEURONS

2 MAJOR

H MAINLY M PROCESSES
VI 2 OUTPUT M
↗ SIZE & SHAPE

② ≡ STELLATE ← SMALLER DK TREE
II IV A SHORTER
REMAIN WITHIN
MAIN INTERNEURONS

DISTRIBN ≠
NOT LARGE # PUR
SENS GRANULAR
NOT MANY GRAN

GST GBULT
LMN
AGRANULAR

COLUMN

OBR GTAR
(NED)

LAYERS

I MOLECULAR
II 1-GRANULAR
III 1- PYRAMIDAL
IV -1 GRANULAR
V -1 PYRAMIDAL
VI MULTIFORM

I
II
III
IV
V
VI

SMALL PYR

GRANULE STELLAT

LARGE PYR

COLUMNS

WITHIN ONE HEM

SHORT ≠ GYRI ⊕ ACTIVITY ALONG GYRUS OR SULCUS

LONG + DISTANT

ALONG GYRI

ANNUATE F

SLF

ASSOCIATION FIBERS

CINGULUM

IMP SINS GM BETWEEN FPOT GBD

IFOF

UNG G

PARAHC G

UNCINATE F

ASSOCIATION FIBERS IN FOREBRAIN

F = FASCICULUM
Ḟ = FIBER

VIEW L

SUBJET ARCUATE F AROUND TEMP & FIS

ARCUATE F

M VIEW L

ARCUATE F

SUPERIOR OR UNCINATE SL Fasciculus

SLF

PRO T

FRONT CONTACT IN MID PORTION

F &

UNCINATE F

iFOF

HOOK AROUND UNCUS & FIS

HUMAN VERY LARGE

EXPANDS F & T → FR DISTANT

BROK INSULA INTERCONNECTS OVERLYING CORTEX IN THAT AREA

INSULA

CINGULUM

CORPUS CALLOSUM

INTERNAL CAPSULE

CORONAL VIEW L

SLF + CINGULATE

ARCUATE F

AREA INSULA

IN DOM LANG GEN

CONNECTS 2 MAJ LANG AREA WITH EACH OTH

LES L ANY WHERE

FORM APHASIA DEFICIT LANG

C VIEW CINGULATE G & PARA HC

COR OF AREAS OVERLYING LIMB SM

FAT AREA

SAME AREA ⟹ COORDINATE

HIGHLY
LATERALIZED
CAN BE ⟨ OR ⟩ BILATERAL

ESTIM
CASES
NEED TO
INTEGRATE
∴
⟹ FUNCTION
AS A UNIT

α & π
COMMISSURES — [COMMISSURAL]

CORPUS CALLOSUM

SPLENIUM
GENU
RONSTRU
MIN
MAJ

MAJORITY
→ NON MIDLINE
IN LANCET

MOST F
INHIBITING A

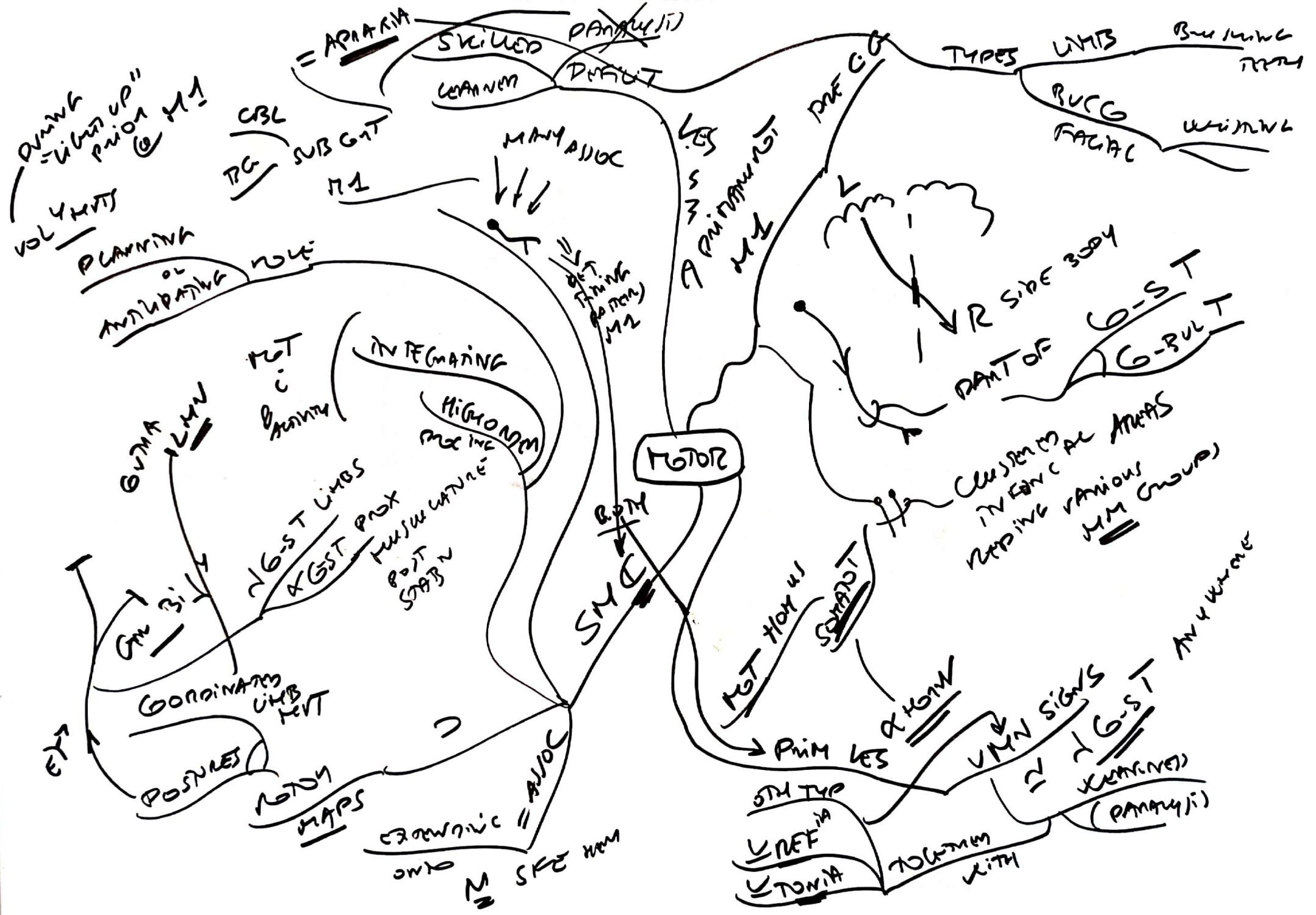COMPETE
&
CON OUT COORDINATION

COMMISSURAL
FIBERS
IN FOREB

- IN
INTOR HEM
FISSURE

HOR SEZ^N
FORCEPS MINOR
GENU
F)

FAN
OUT

SPLENIUM

FORCEPS
MAJOR
T)

MIDB
T) GN

PRETEC   PRETEC
NUC   NUC

CRONAL
BODY CC
F) OR P)

) FISSURE
T)

SMALL
T—T
α—α
& OLF — OB
BULB

αGM

F-F

GENU

ROSTRUM

BODY — P—P
&
T) PMT

F-F

SPLENIUM   O—O
T—T
Ti

HI

MIDB

PONS

CORONA RADIATA   INTERNAL CAPSULE

Ē IC   PROJECTION   ANAT IC   αLIMB
                                  ΠLIMB

K PARTS
CORTEX

TO   FROM

PROJECTIONS
FIBERS
IN FORE B
(INTERNAL
CAPSULE)

HOR

LV   CC   CORONA RADIATA

BODY CAUDATE

HEAD OF CAUDATE NUCLEUS   FRONTAL G1TE7

T   BG

LENTIFORM NUCLEUS   T   IC

CO-PONTINE F
T-G E
(FROM DM, ANT)

CO BULF

CO PONTE

FRONTAL G1TE7

A LIMB

GENU

LENTIFORM NUCLEUS

LENTICULAR
DEEP BR
FROM
MCA
& ACA
A CHOR

PCA

T LIMB
of IC

T-G
(FROM VP-KL)
VA)

CORTICOSPINAL TRACT
TRAVELS
⟳ → Ti LIMB
of IC

ARM
TRUNK
LEG

A KL

T   T

T = THALAMUS

BD SUPPLY

T G
on
BG

T G
BETWEEN
T & G1TE7

FUNCTIONAL AREAS

OVERVIEW

ONLY SMALL PORTION

OF

1° PRIMARY

&

ASSOC ASSOCIA^

AREAS

OF FOREB

UNDERSTANDING FUNC^

ASSESSING

LESION

MOT

SENS

(SOMA) SOMAT VIS

AND

MOT

SMELL

SIGNIFICANCE

MOT MOVEMT

PRIMARY

MOT

SENS

P

F

VISUAL

OLF

R M

FUNCTIONAL AREAS

VA/K MA S

ASSOC

&

...TION

...HI GROU

ONOM PROGRESSIVE

RELATED

ADJACENT

TO EACH 1°

LARGELY SYMMETRICAL IN FUNC^

ALTHOUGH THERE IS SOME LATERALIZA^ IN SPEC AREAS

ON LU SMALL PORTION OVERVIEW OF 1° **PRIMARY** & ASSOC **ASSOCIA^N** AREAS OF FOREB

FOR UNDERSTANDING FUNC^N ASSESSING LESION

VGT SOUS (SOMATO) SSOMAT VIS AND MOT SMELL

RGT SOUS
F ___ T ___
AND
L view

CLOSELY INTEGRN
VIGW THEIN RELEVANT ASSOC

* SIGNIFICANCE TEST RELEVANT PRIMARY

FUNCTIONAL AREAS

RGT SOUS
F P
OLF
R M VISUAL

VARIOUS SYMMETRICAL IN FUNC^N

ALTHOUGH THERE'S SOME LATERALIZA^N IN SPEC AREAS

② BROADEN NAXURE IN TERCT PERSON Y (LANG emo^n, movement SELF
= WHO KN AM-

ADDITIONAL LAYER

VAX MAS ASSOC

INITIA^N INTEGRA^N PLANNING

MGT ACTIVITY ②

INTERPRETA^N INTEGRA^N MIGING

OTOR PROCESSING

RELATED ADJACENT TO EACH 1°

SENS i ①

A hand-drawn mind map with the following visible text:

- LESIONS
  - prim => cortex derived DEFICIT
    - perception s...
    - weakness/paralysis
  - ASSOC => tumor
- SYMMETRY
  - SEX ≠
  - R&L
  - PRESERVED gen for...
  - SOME I TASKS → L & R
  - surveillance / attention
  - broad understanding
  - context & metaphor
  - Narrow
  - sharply
  - focused
  - attention
  - detail & concrete categorization
  - physical world

Central node: PRIMARY AREAS & THEIR UNIMODAL ASSOCIATION AREAS

MOTOR branch:
- ASSOC: SPEECH MOTOR → PRE CG → PRIM
- G-S / G-Bu → TRACTS
- SOMATOTOPY
- MOT HOMUNCULUS
- M1
- LES
- SM COMPLEX — LES → APRAXIA
- U.TY PREMOT SE RESP TO SPEC AREAS BODY → PR

SENSORY branch:
- POST CG
- PCMLS STT
- PR CG / TRITT
- TT LIMB IC
- SOMATOT
- STRS
- HOM
- CORTICAL PLASTICITY
- LATERAL INHIBIN
- SOMAT SENSORY
- PRIM LES
- ASSOC LES
- TACTILE AGNOSIA
- ASTEREOGNOSIS

VISUAL branch:
- ASSOC
- LES → PRIM
- VIS AGNOSIA

AUDITORY branch:
- ASSOC
- WERNICKE — TRANS VERBAL AGNOSIA
- PRIM LES
- TONOTOPIC
- PRIM → TG MEDIAL GYRI

OTH branch:
- OLF SYS
- CV TOR GYRI — T
- INSULA — TASTE
- HETEROMODAL ≠ UNIMODAL

Top nodes:
- DEFICIT IN 1 MODALITY
- PARTIAL (COMPLETE) ⇐ LES
- LITTLE IMMEDIATE MEANING
- THALAMUS ↑ → APPROPRIATE NUCLEI ★
- PR
- EACH PRIM

A hand-drawn mind map centered on "MOTOR"

- DURING "WARM UP" = IMMED PRIOR @ M1
- CBL
- BG → SUB CxT
- M1
- = APRAXIA
- SKILLED PARALYSIS
- LEARNED DEFICIT
- MANY ASSOC ↓↓↓
- T (v. SET OF PRIMING PATTERN) M2
- LES S ? A PHOTOURIST PRE CG M1
- TYPES LIMB — BUCCAL
- BUCCAL
- FACIAL — URIMIWL

- VOL MVTS
- PLANNING
- OL ANTICIPATING ROLE

- VR SIDE 3BU
- PART OF G-ST
- G-BULT
- CLUSTER OF AC AREAS IN EACH C MAPPING VARIOUS MM (GROUP)

- MOT C BROWTH
- INTEGRATING
- HIGHONDM PROC INC
- d6-ST LIMBS
- XGST PROX
- PULSULCATURE POST STABN

- OUTMA UMN
- GN BILY
- COORDINATED UMB MVT
- POSTURES
- MOTOR MAPS
- CZOBRAINIC = ASSOC
- ONTO M SKE HOM

- R.SYM
- SMC
- MOT HOM W
- SOMAT
- α HORN
- PRIM LES
- VMN SIGNS d d G-ST ANYWHERE
- 5TH TYP
- ↓ REF
- ↓ TONIA
- TOGETHER WITH
- X (ACTIVE) (PARALYSIS)

FEF
PREMOT PRIMARY
BROCA

SUPPLEMENTARY SMA ★
SUPPLEMENTARY
PRIMARY M1
CS
PMA ★ PREMOT

GRAPHIC NEURON TTIS SOMADT
PET HOMUNCULUS

TOE KNEE HIP TRUNK SHOULDER ARM ELBOW WRIST HAND
FINGERS THUMB NECK BROW EYE FACE LIPS TONGUE JAW
PHARYNX
SIZE OF M POOL

↑ OF MOT
ON L_3
α TO G SULCUS
& SMI
SUPPLEM SM
FEF PM
F FIELDS

SEPARATE INNN MANY SMALL MM
TRUNK LEG PROXI
GRAPH NEURON

CS

PRIMARY

ASSOCIATION

SIZE & ACUITY DISCRIMINATY

DISCRIMINATE II SENS INPUT

RIB

HAND

FINGERS

FOREFINGER

FOREARM

ELBOW

ARM

TRUNK

HIP LEG

GENITALS

EYE
NOSE
FACE
LIPS
JAW
TEETH
GUMS
TONGUE

SLOWLY ADAPTING

SASRs RAPIDLY

RASR

MUSCLE Rs

JOINT Rs

DISTINCT AREAS

EACH R

SENSITIVE FIELD

Scanné avec CamScanner

Scanné avec CamScanner

OLF
BULB
CN I

OLF

T POLE

PRIMARY
| VIS
| AUD
| CNS
| OLF

VISUAL

OLF

M R

ROTATING T

endor G

N
SFE

INSULA

VPM R

GUSTATORY

TASTE

AUDITORY

Mind map — central node: **FRONTAL**

- INTERGU
- DFC
- SMC
- 2 MAIN / PANTS
- SON / RST / BG / CBL) GURX
- ↑GNX & ↓ & L & M
- RS NUCLEI / ACC
- AMYG / HT
- NEG ATTENTION & RGT RES TO FS
- ↗ AROUSAL / NAK ACH / (NEG EMO)
- → SMC & BG) ENGAGE EXPUN EMOTION & BEHAV
- SIZE
- PRIMARE AREA
- SOLVING PBS INDIVIDUALY
- SOCIALLY
- AROUS FAMBON AGAINST PREDATORS & FORAGE FOOD
- PERSONALITY: ... PREDOMINANT ... REST ...
- MORALITY / WHY / OI MASK
- PLAN / IDENTITE
- INNOVAN
- CAGE / 4.5
- ∅ NEU / ↓ INTERNAL
- PSYCHIAT
- DEPN / SCIZO
- N ↑ INA
- CRITICAL
- HIGH ON WHAT
- MONOAMINIC DFBS
- 5HT / NE / DA

Hand-drawn brain diagram with annotations

EXECUTIVE FN

COGNITIVE FLEXIBILITY

DIRECTING & MAINTAINING ATTENTION
MORALITY
PB-SOLVING
ADJUSTING BEHAV TO SOCIAL NORMS
PLANNING
WM
DELIBERATE DECISIONS

REGULATE ATTENTION & ADJUST RESP TO SS

FRONTAL ASSOC IN L HEM

11

BG

CBL

DA
5HT
ACh
NA

REG & EXPRESS EMOTION

AMYG
HT
NC ACCUMBENS
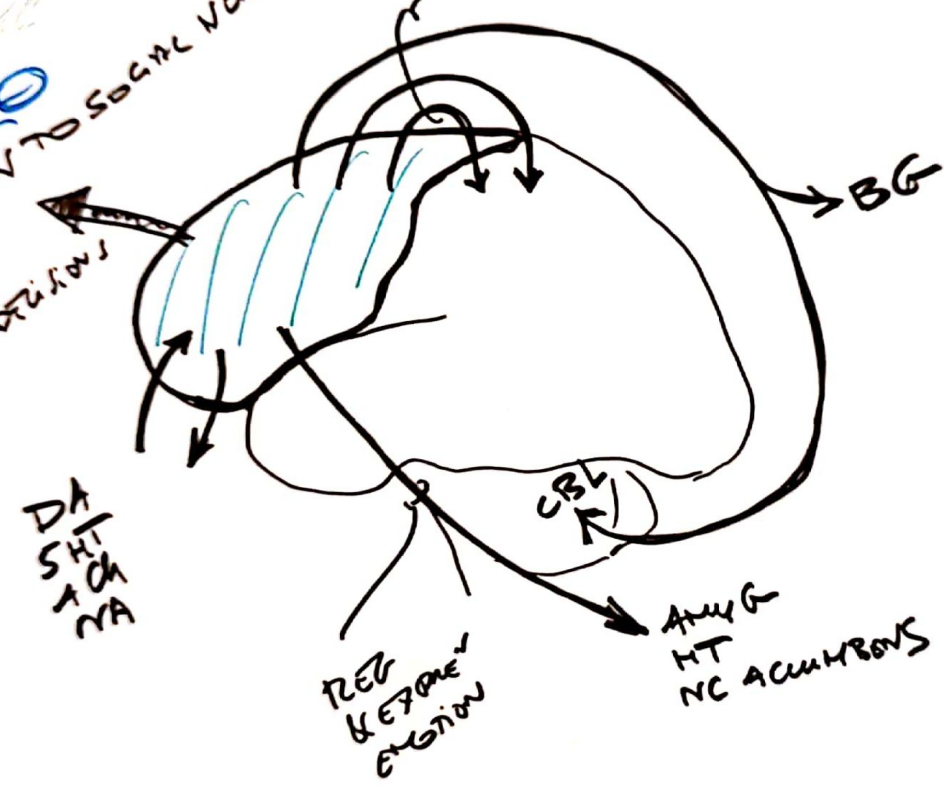
PHILOAS GAGE:
DAMAGE TO
F ASSOC AREAS

SUB G
F BUND

UNCINATE F
UN CINUM
> LF
< FOF

INFIRM
TRACT
?

MODERN
"CONNECTOMIC"

NEW
INSIGHT

GOG GM (GM)
110G TOT
WM

BODY

DAMAGE
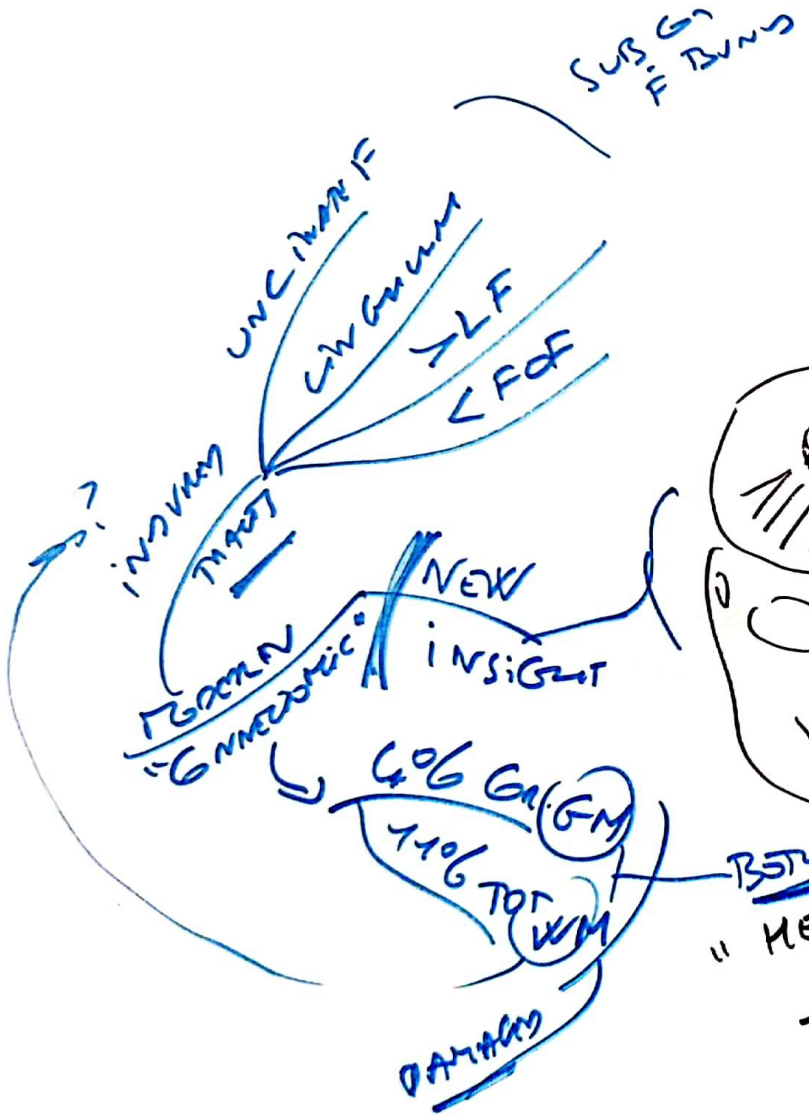
"HE WAS NO LONGER GAGE"
- DIFFICULTY INTEGRATING IN SOCIAL GROUPS
6)) SIMPLE SOCIALY ACCEPTABLE BEHAV
- DIFFICULTY PLANNING
- IMPULSIVE

TACTILE
AGNOSIA
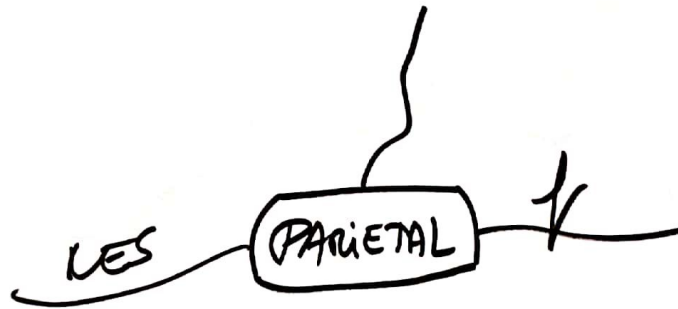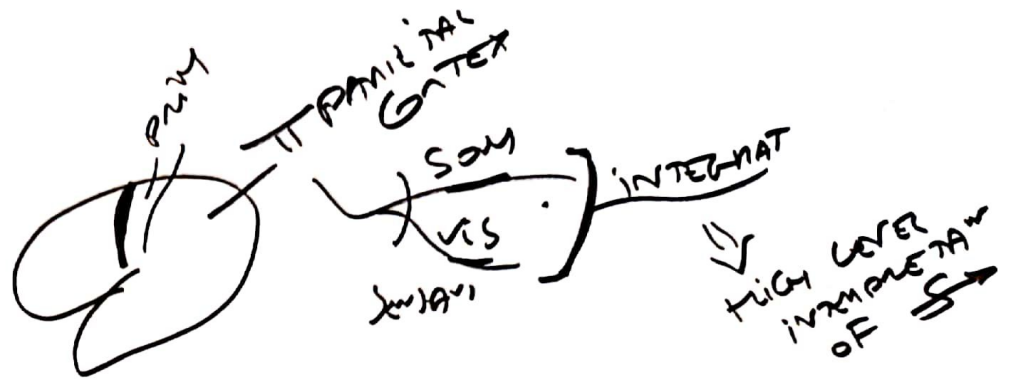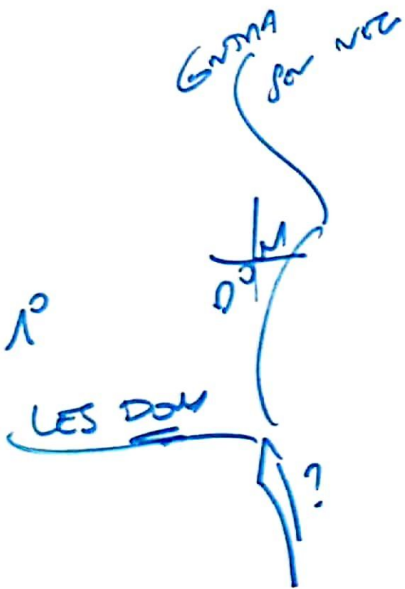
GNOSIA
par NEZ

DOM

LES DOM

1°

?

PARIETAL

LES

ATTENTION
TOL
CONT PAR NON DOM R

TO R
MEDIATO BON

LES OVEJ OF
YOU D BE
GROW/ATED
FOR BY INPUT OM DROR

PNM

TT PARIETAL
CORTEX

SOM
VIS

INTEGRAT

HIGH LEVER
INTERPRETAM
OF

PARIETAL

FOCUS ON STIMULUS;
FILTER OUT DISTRACTIONS

CRITICAL { - ATTENTION
- AWARENESS OF SELF

EXTRAPERSONAL SPACE

VISUAL i

VISION ANALYSIS
RECOGNITION
IMPORTANCE

AUDITORY i

SELF
PEOPLE
PROPER i
MVT
POSITION
DISTANCE
IN SPACE

PFC
VALUE
DECIDES
WHICH f>
TO FOCUS ON
& FILTER
OUT
DISTRACT

ORIENT
OUR
ATTENTION
IN
SPACE

R   L

IN TIME

Scanné avec CamScanner
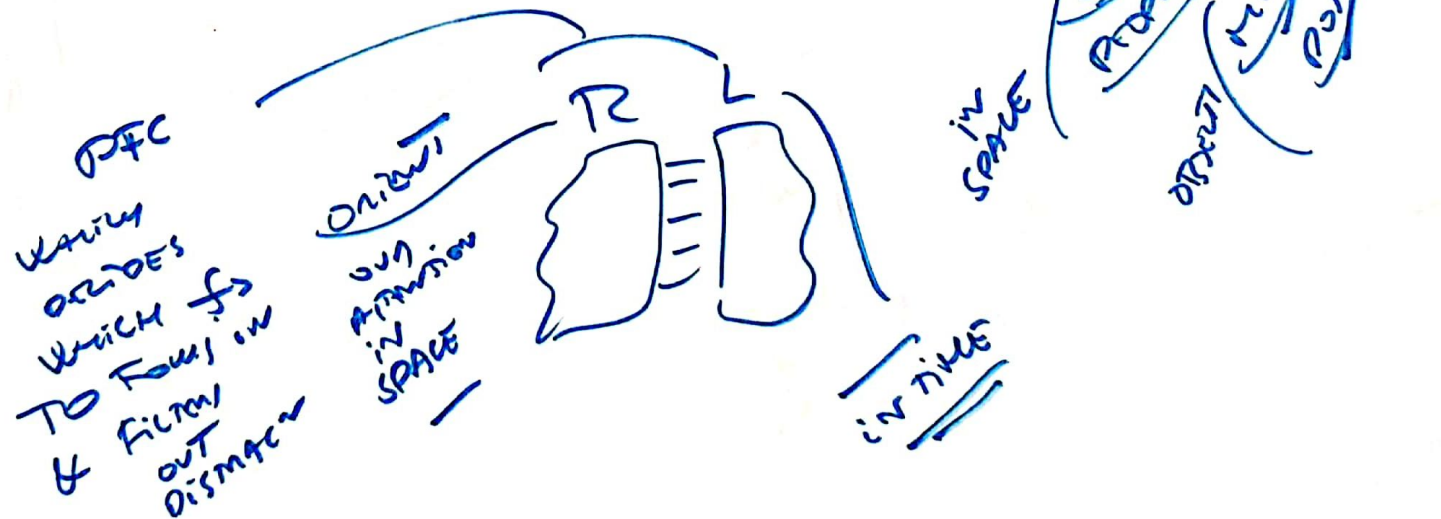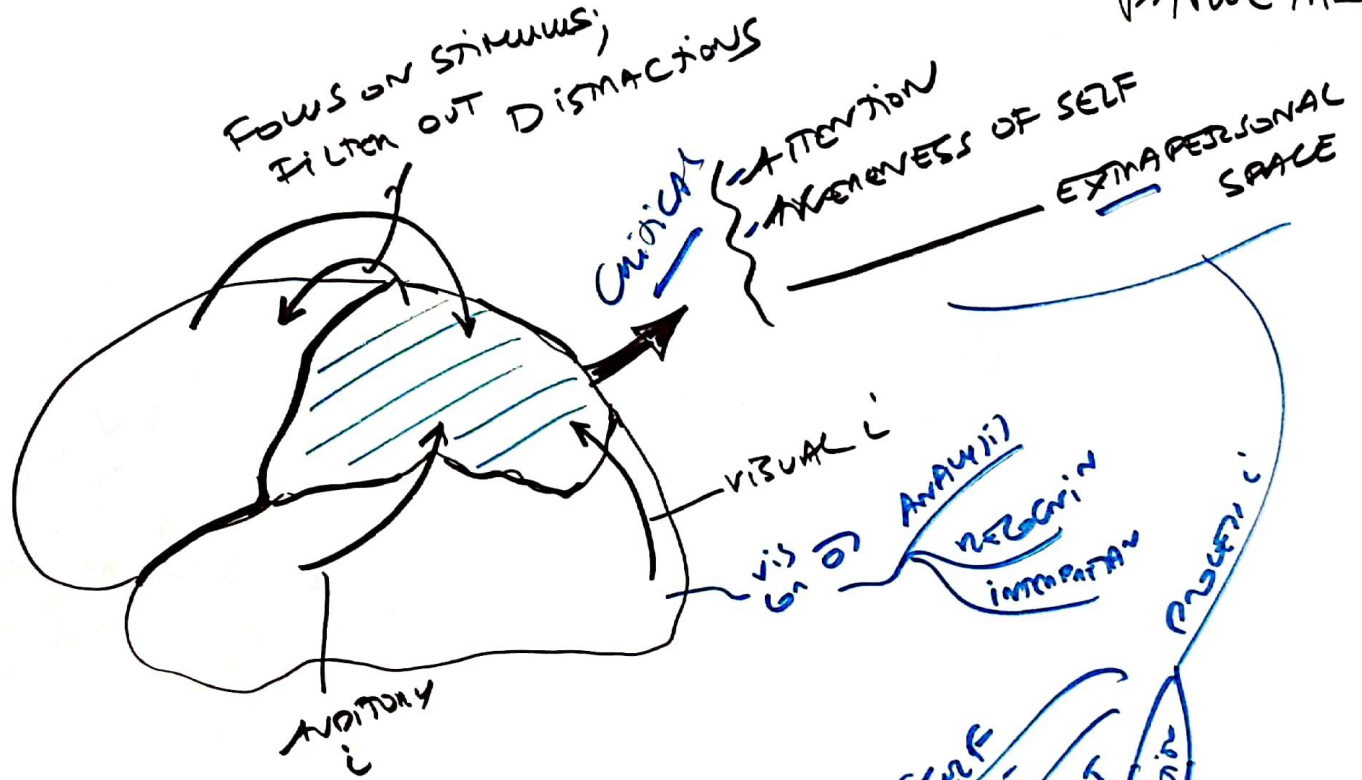
PPC **NON DOM**

R BRAIN INJURY

TYPICALLY

R   L

CONTRALATERAL NEGLECT

Fails to draw L side of figure **SD**

ENV INT SIDE OPPOSITE

R&PATHWAY INTACT
NEURONS
IN INTEREST
↳ ATTN DIRECTED TO THEM
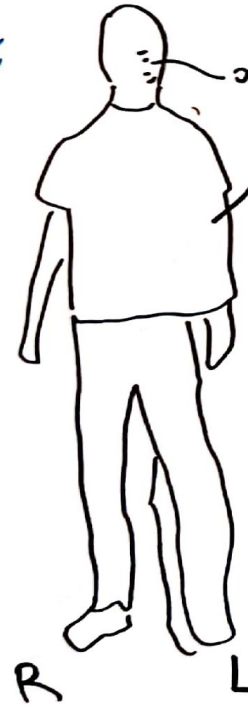
or shave L face

does not dress left side of his body

does not eat from L side of his plate

SELF

R   LEFT SIDED NEGLECT
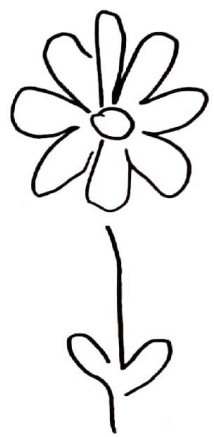
Fails to circle (A) on L side sheet

EXTRA PERIO SPACE

ON L SIDE DOWN ↓↓ CAN EXPAND

T ASSOC
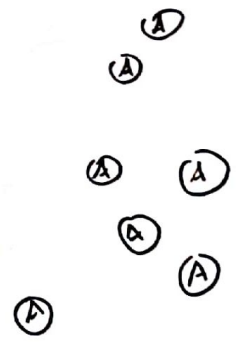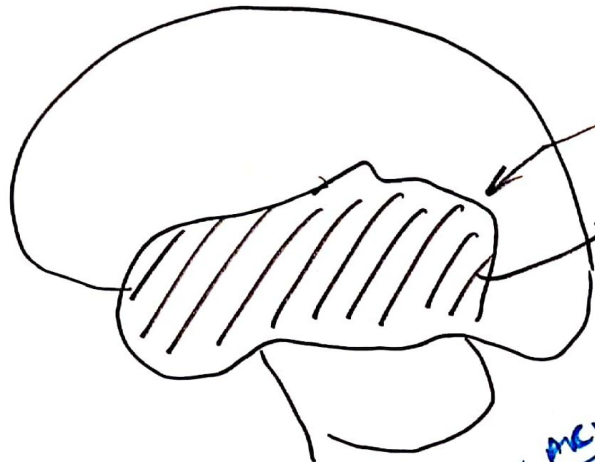
L LATERAL
&
R MEDIAL

RECOGNITION
OF LANGUAGE PATTERNS

RECOGNITION
OF ⟿
& PATTERNS

CAN ACKNOWLEDGE
& DESCRIBE

X NEGLECT

MAX

S° R & L

DAM → AGNOSIA
(INABILITY TO RECOGNIZE)

on MEMORY

R
T

FACE & OBJECT

R

VISUAL ⟿
ARE LINKED
TO MEANING
& RECOGNITION

IDENTITY

COMPLEX
ANOTHER ONE
LATERALIZAN
OCCIPIT

FUSIFORM
GYRUS

PROSOPAGNOSIA

LANGUAGE (central node)

- MANY AREAS BOTH HEM
  - Produc^n
  - Comprehen^n
  - DISCRETE (CLASS) 19th Century

- LFG
  - PROSODY
  - BROCA
  - WERNICKE
  - Arcuate F

- MODERN
  - SEMANTIC PROCESSING

- CLASSICAL
  - Order
  - Predominant for past 150 years
  - USEFUL FRAME WORK for DIAGNOSIS

- LESIONS
  - APHASIA ≠ DYSARTHRIA
  - Conduction
  - Broca
  - Wernicke
    - EXPRESSIVE = PRODUCTIVE
    - RECEPTIVE = SENSORY

Legend:
☐ = AREA
⊃ = GBE
F = FASCICULUS

Scanné avec CamScanner
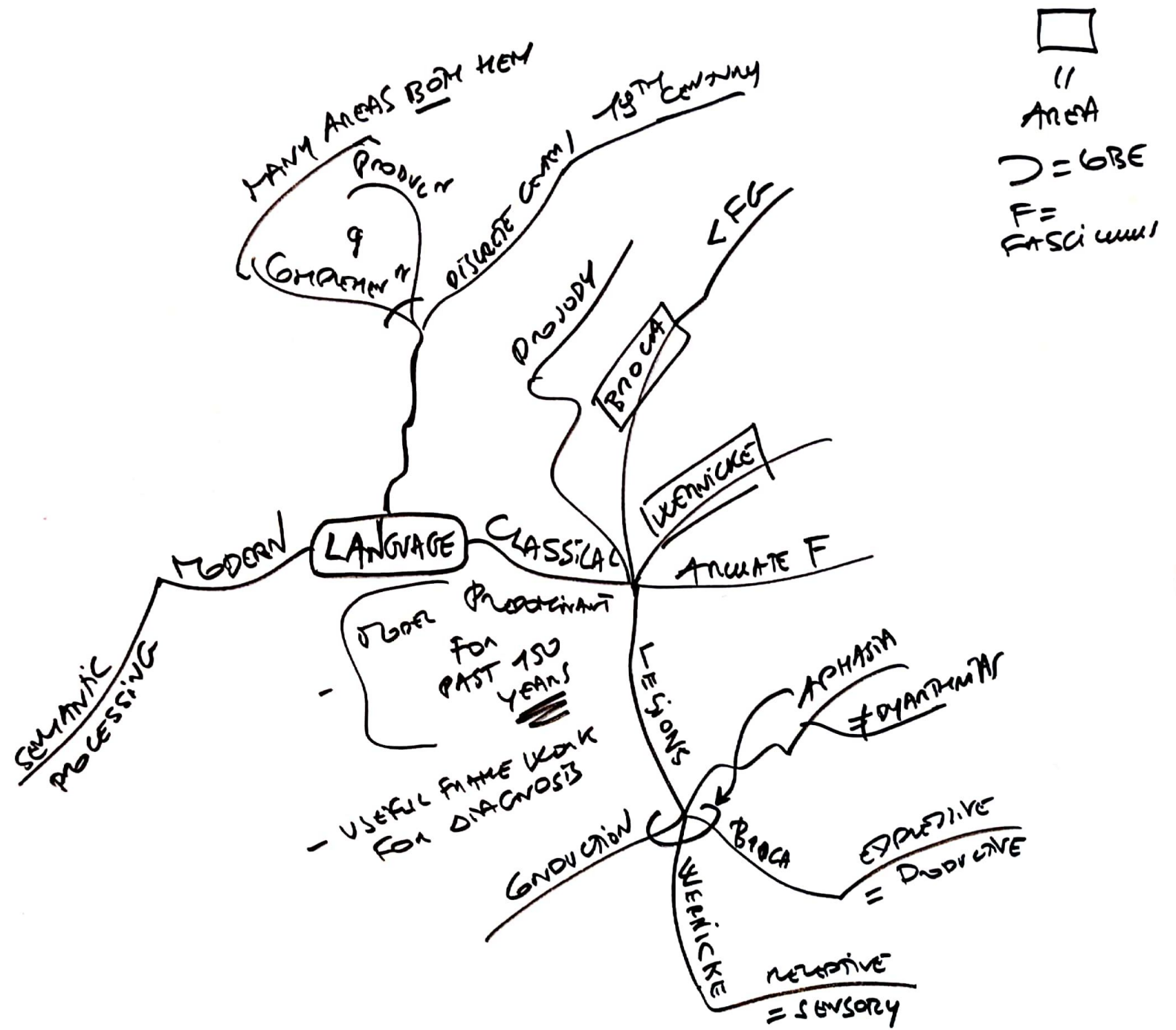
CLASSICAL MODEL LANGUAGE PROCESSING

Left branches:

FOR CONCEPTS OBJECTS IDEAS

WORDS

SYMBOLS

SIGN

WRITTEN

SPOKEN

PRODUCED

LANG

WKI HUB

[A]s

IN EG

α < PMT PMCG

Broca EXPRESSION

Top branches:

WE WANT TO PRODUCE LANGUAGE THAT VI MACHE SENSE & UNDERSTAND & RE APPROPRIATELY

< PMT

LF

MONITORS & FACILITATE REPETITION

ARCUATE FASCICULUS

SUBCORT BUNDLE WM

WERNICKE COMPREHENSION

Right branches:

IN TG

AROUND TREND OF d SULCUS INTO P MR

SIGNED

SPOKEN

INTERPRET & ASSIGN MEANING TO SYMBOLS

Bottom/blue:

MELODY PROSODY RHYTHM EMOTIONAL EXP & ACCENT

R

L

50% RIGHT HANDED

70% LEFT

HIGHLY CATEGORIZED

DEFINED DOMINANT NOT HANDEDNESS

= INABILITY COMMUNICATE

ALL ITS FORMS SPOKEN WRITTEN SIGN

≠ DYSARTHRIAS
CONTENT INTACT
PRODUCN IMPAIRED

π
LESION
MM PHAR
LAR
OR TONGUE
NN

— APHASIAS
—,,

COMPREHENSION — MILK WHITE SNAKE

① PRODUCTION
DIFFICULTY REPEATING WORDS
BOTH COMPREHENSION
& PRODUCN
LANGUAGE ARE INTACT

CANNOT TRANSLATE
UNDERSTOOD
WORD

BROCA & ITS CONNECTIVITY

PRODUCTIVE — BROCA

— EXPRESSIVE OR MOTOR
— NON FLUENT SPEECH
— DIFFICULTY WITH SYNTAX
GRAM
REPETITION PHRASE
& PRODUCN INDIVIDUAL WORDS
— COMPREHENSION
IS INTACT

SPARSE HALTING

OFTEN
VERY FRUSTRATED

② PRODUCN
HOWEVER

— IMP ARC FASC?
SELECTIVE
LES
ONLY VERY RARELY
& AREAS CORTEX
USUALLY INVOLVED
VARIOUS DIAGNOSIS

WERNICKE
— RECEPTIVE OR SENSORY
— FLUENT SPEECH
SYNTAX
GRAMMAR
STM OK INTACT WORDS
— DIFFICULTY WITH
COMPREHENSION OF SPEECH
— PRODUCES NON SENSICAL
WORDS & PHRASES

= MOTOR
RHYTHM
(SENSE
MEANING)

FLUENT
WRONG WORD
NEOLOGISMS
"GIBBERISH"
— REPETITION MAY BE IMPAIRED
— OFTEN NOT AWARE

IS INTACT

— PROGNOSIS OF PURE CONDUCN GOOD
ST USUALLY RESOLVE
KPOS
OTH ASS AREAS
TAKE ...

Scanné avec CamScanner

Mind map: **MODERN CONCEPTS ABOUT NEUROBIOLOGY LANGUAGE**

- ACROSS GYRATION NETWORK
  - i GRAMMAR
  - MANIPULATE
- LMF
  - WORD RETRIEVAL
  - LEXICAL PLANNING
- BROCA HUB
  - INFLUENCE CONTEXT
  - MANIPULATE MEANING
- PRODUCTION
  - PRONOUNCES
  - GRAMMAR
  - MEANING
  - APPROPRIATE
- COMPREHENSION EXTENDS WELL BEYOND MECHANISMS
  - COMMIT MEMORY
  - RETRIEVES MEANING APPROPRIATE FOR CONTEXT

- CLASSICAL GOOD DIAG
- NOT √ PATHO CAN BE EXPLAINED
- LATERALIZAN NOT AS STRICT
- BRAIN CAPACITY COMPENSATE FOR √ LANG AREAS
- & WIDE VARIETY DISORDERS
- PRIM AUD / HESCHL
- BILAT
- SOUND
- RECOGNIZE SPEECH
- WHEN LANGUAGE √ STG ACTIVATED
- SEMANTIC PROCESSING
- MORE WIDE DISTRIBUTION MEANING
- STG
- TOOLS
- α BROCA PO / OTY PMTJ VL

noe↓

Anc I
NEPESIN

MANLY BINT

└ MASHOUĚ
Because higher—order
In lot of ↓
& modern hully influence syp

SUMMARY

CORRELATION

VERTEX (SPIKES) MATH

T O P CORP

PRODUCTION
NETWORK
BROCA = HUB

MODERN
2

Scanné avec CamScanner

MODEL
UNDERSTANDING
LANGUAGE
PROCESSING
IN L HEM

USUALLY
DOMINANT
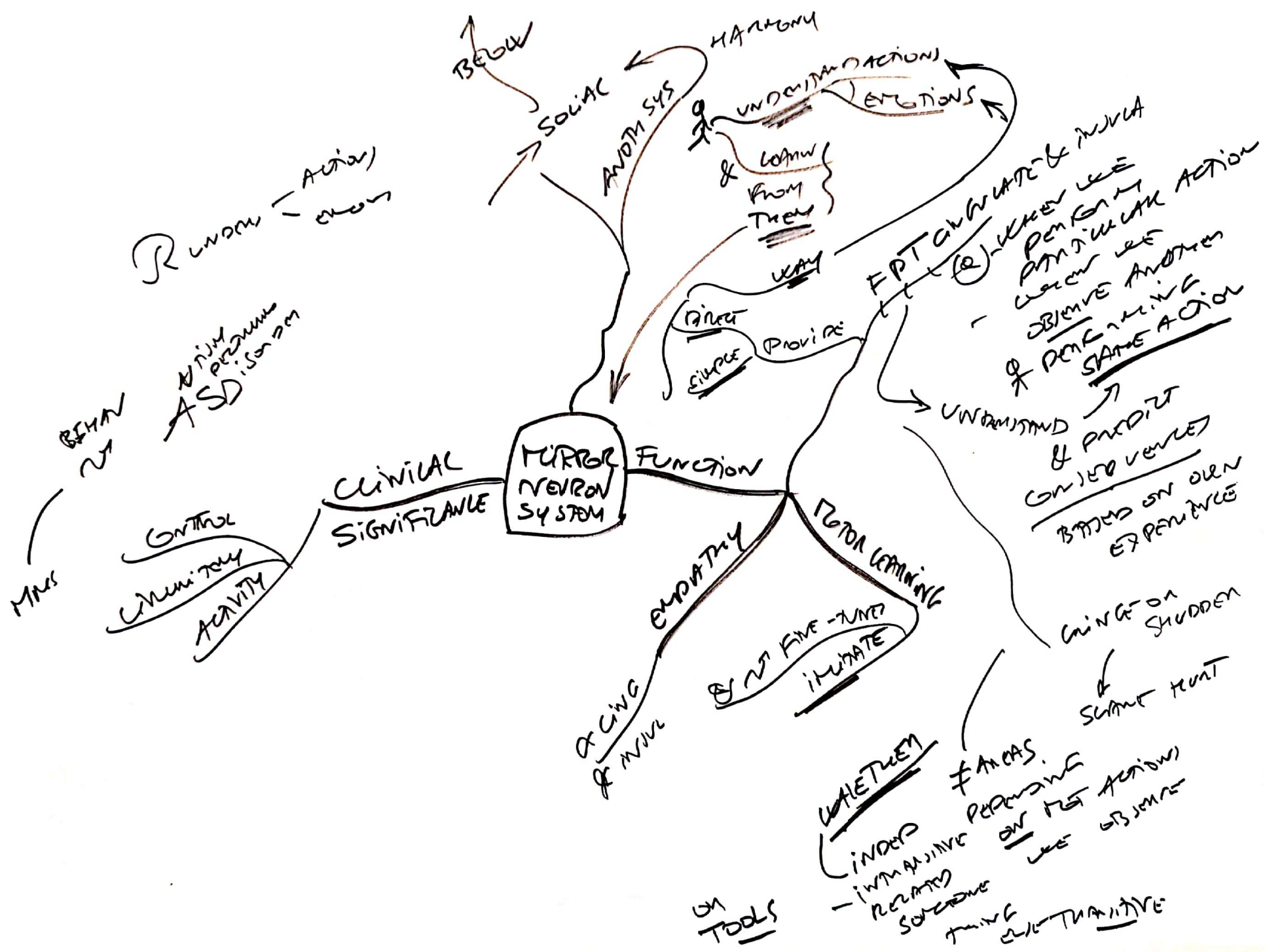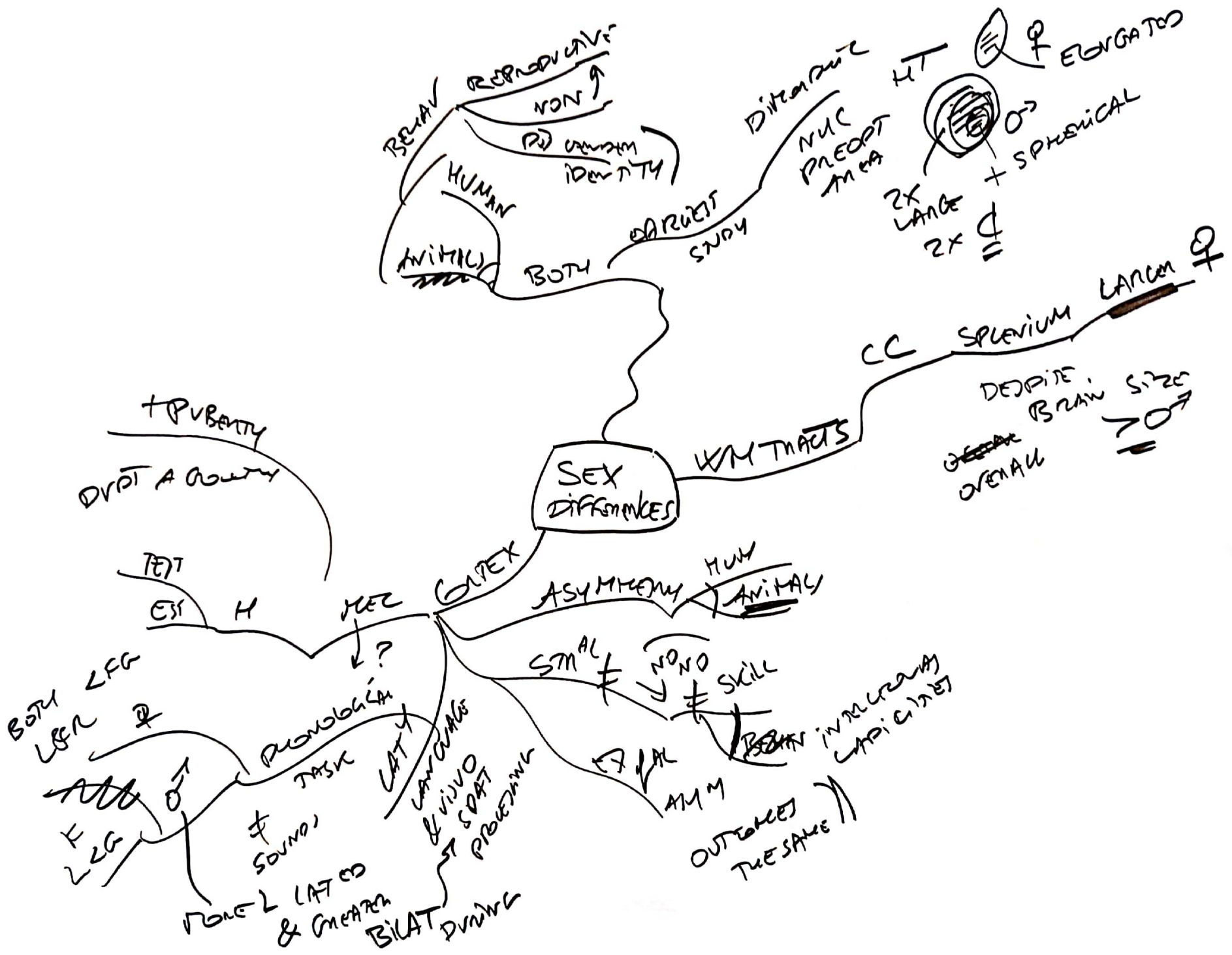
"BROCA" SPEECH

PMFC

≤P
CORTEX — AND ≤T HEM   MOST
                        ≤T HEM

T>T

WORD — MF
RETRIEVAL

VIS ASSOC AREA:
ROLE IN PROCESSING
WRITTEN LANGUAGE

SYNTAX — ≤F

≤O

α>T

CONSTRUC"
BASIC
PHRASE
STR

MT

WORD
LEVEL
COMPREHENSION

≤T

REC & NAMING
α : PEOPLE
T : TOOLS

SEX DIFFERENCES

BRAIN REPRODUCTIVE
NON ↑
REPRODUCTIVE IDENTITY
HUMAN
ANIMAL
BOTH
EARLIEST STUDY
DIMORPHIC
NUC PREOPT AREA
HT
♀ ELONGATED
2X LARGE
O³
+ SPHERICAL
2X ♂

WM TRACTS
CC SPLENIUM LARGER ♀
DESPITE BRAIN SIZE > ♂
OVERALL

CORTEX
ASYMMETRY HUM ANIMAL

+PUBERTY
DVPT A GROWTH
TEST
EST H MEC ?

BODY LEG USER ♀
♂
LEG F
PHONOLOGIA TASK
LAT ♀
SOUNDS
MORE L LAT CO & GREATER
BILAT DURING

LANGUAGE & VISUO SPAT PROCESSING

SMALL ≠ NONO ↓ ≠ SKILL
♀ ♂
AMM
BRAIN INTRACRANIAL CAPACITY
OUTCOMES THE SAME

Scanné avec CamScanner

BLOOD SUPPLY

Scanné avec CamScanner

Scanné avec CamScanner

ACA
McA
DCom
PCA
BA
iCA
ECA
CUA
VA
BC
SC
AO

OBLIQUE
LA 20MAL
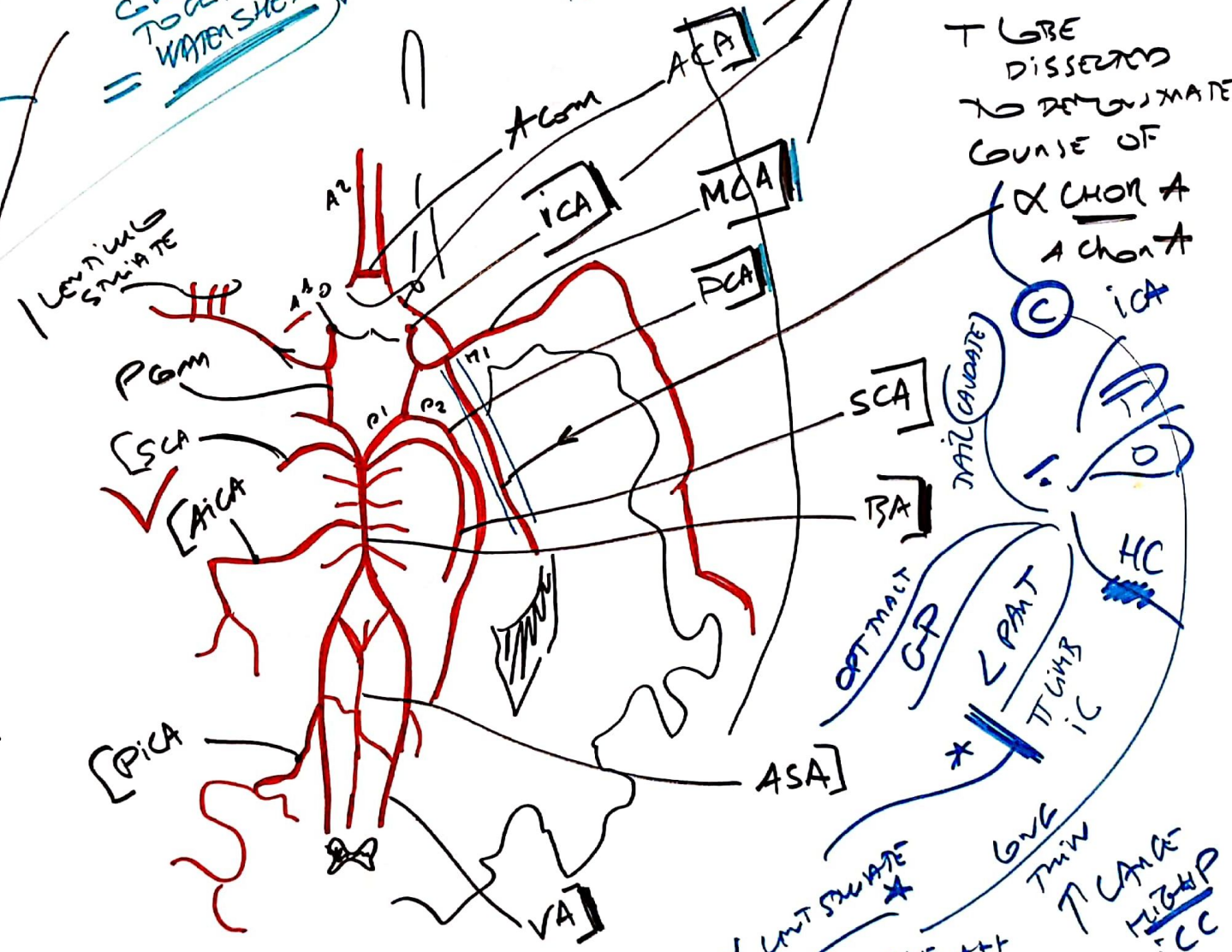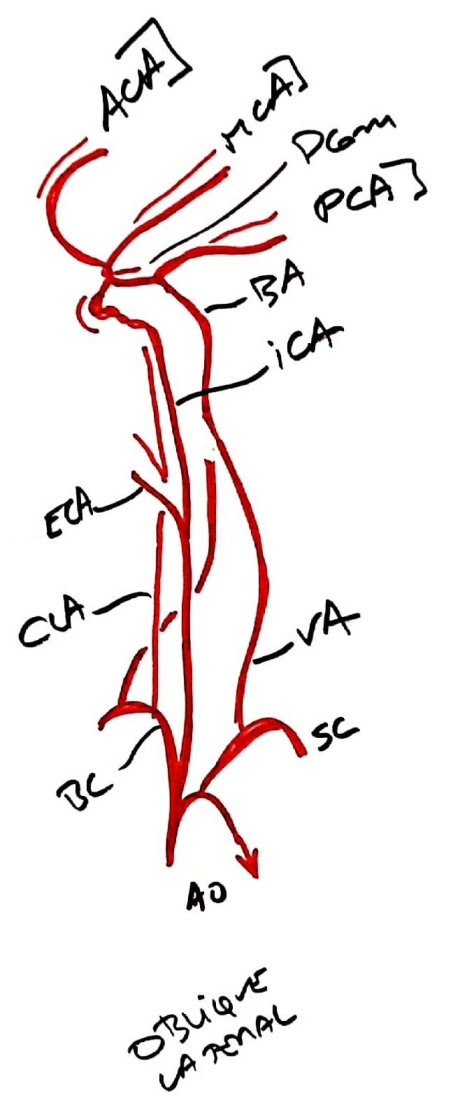
A & PCA

ON
MEDIAL
SFE
R =

VENT STRIATE   HEAD CAUDATE   αLIMB IC

CONTRIBUTE DEEP BR

N ... BR OVER DSOR BRAIN

1-2cm
↗ SFE
MEDIAL SFE
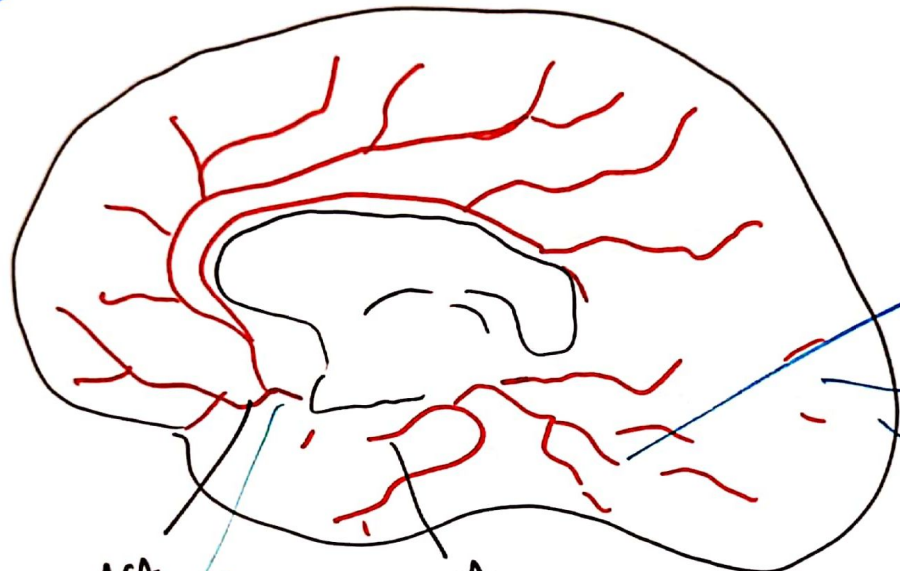
ACA
IMD
INTERHEMIS
FISSURE
↗ SFE CC

PCA Ⓓ   SWINGS BACK
AROUND MIDBRAIN

M SFE Ⓓ
< M
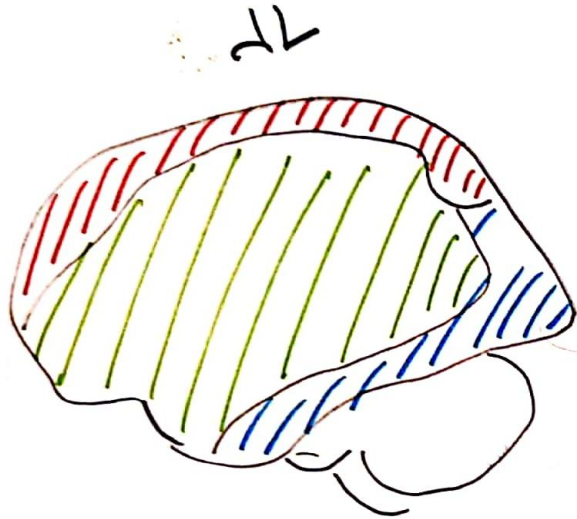SPLENIUM CC

T
PMD MIDB
PMT π LIMB
IC

INSULAR CORTEX
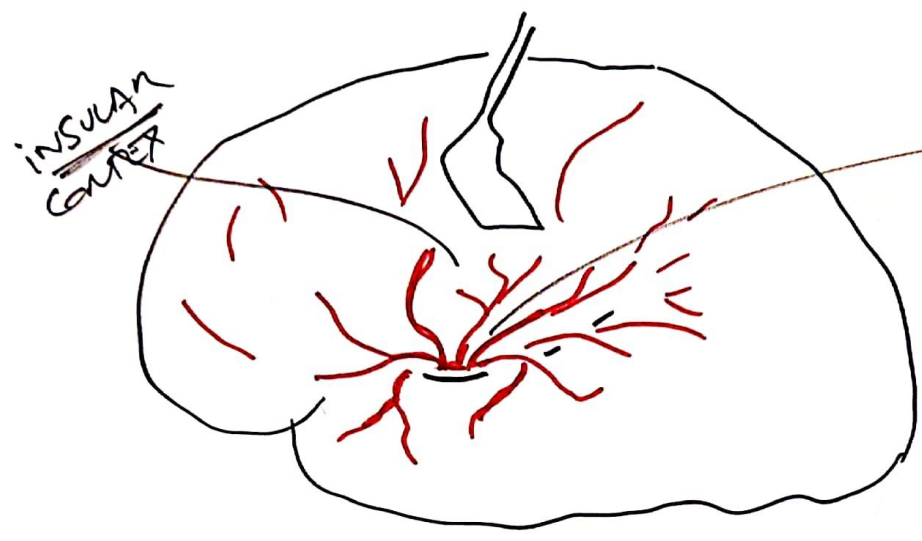
LARGEST — (B) MCA BRANCHES INTO > & < ÷ IN dtis TO SUPPLY d ASPECT OF F/P LOBES & T LOBE respectively

CAUDATE
iC
PUTAMEN & GP
MCA > ÷
MCA < ÷
LENTICULATE AA =

BG
& TT LIMB iC

DEEP Br IN GROWEN WITH SMALL ÷ Br
ACA

iCA
MCA

iC
BG

MOTOR STROKE
CAN
WEAKEN WALLS
↓
SMALL VULNERABLE ACA
TO ++ ↗ BP

Scanné avec CamScanner

dL

ML

MCA
ACA
PCA

ACA   MCA
ACA – MCA WATER SHED
MCA
MCA – PCA WATER SHED
PCA

22
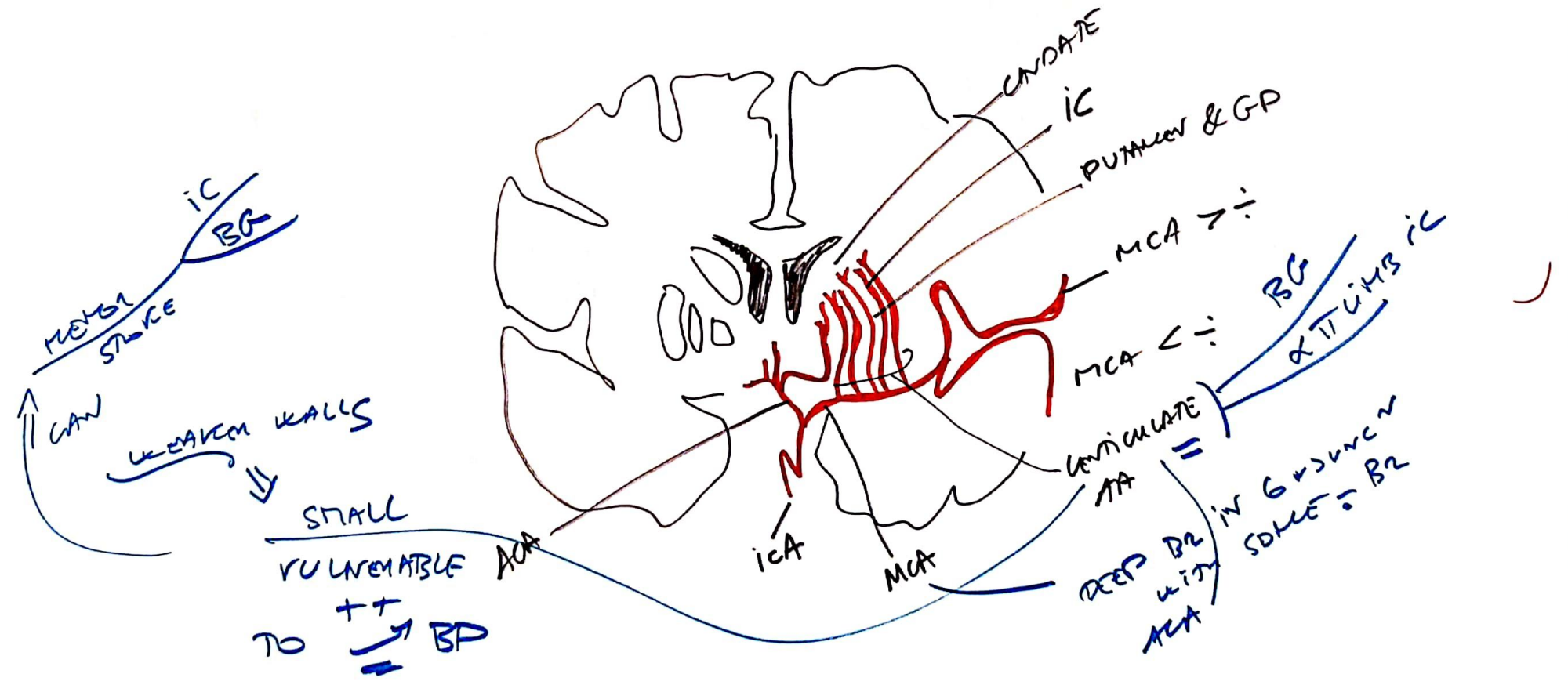
PCA AREAS
MCA
ACA
PCA
ON STE
CBR HEMIS

PERF ARIAS

M
A
P
A chor
___
DEEP IN
FOREB

COR

CORONAL view:
T
CC
dV
INSULA
IC
C BRANCHES
PUTAMEN
UPPER IC
LOWER CR
BODY CAUDATE
IC
HC
R
GP
PUTAMEN

ACA
MCA
PCA
A chor

M
R
CC
?
3V
T

HOR
dV
(aN)
CR
G
TL
dV
TM
IC
T

APHASIA SQUARE

Good comprehension — Poor

Fluent speech / Non fluent

Poor repetition — Good

	Good comprehension	Poor
Fluent speech	Conduction	Wernicke / Trans cortical Sensory
Non fluent	Broca / Transcortical motor	Mixed Transcortical

Poor repetition (upper diagonal) — Good (lower diagonal)

ANTERIOR CIRCN

Gm loca

LACUNAR INFARCTS

PURE MTR STROKE (IC)

MICRO ATHEROMA & HYALINE ANTERIOS (LIPOHYALINOSIS) 2° TO UNMANAGD HT

VF LOSS

APRAXIA NEGLECT

Ø Cort SIGNS

GNTMA PAR

iC STRIATUM

LS

Medial M Cerb SD

← ANT

VROSTRAL & TEMP GANGLIONRY IPSI FACE Rt

IPSI ATAX & PULM LICP

IPSI MARM EF SPI TH

√ S-T TRACT VEJ

HI CUPS

√ GAZ REF HORIZONTAL DIPLOPIA

XI X IX

AMB SPEC

PICA

VERTIGO IPSI SEN SOLN LABYRINTHINE A

IPSI ATAXIA M & ICP

IPSI LOWER SI EF

LATERAL MEDULLARY SD (WALLENBERG)

"DON'T PICK A (PICA) HONE THAT CAN'T EAT"

LATERAL PONTINE SD

√ PAIN & TEMP GNTMA S-T TRACT

SPI TH IPSI FACE

VES

NYST

ROM

EFFECT OF STROKE

ACom
ACA
iCA
CONT. STRIATE

ICA

MCA

A Chor P com

PCA

SCA

PONT BA BASILAR

√ CATECHLMN √ MARM STRIATE & 2° NONMTR

AICA

PICA

ASA VA

SPER PARALYSIS FACE (LMN UES VS UMN UES IN CONT STROKE)

LOCKED-IN SD BASMNT

FA

VES

RENAL CME MVTS

REKALO CME MVTS

MTR & SENS CORT

CONTRA PARALYSIS

SENS ↓ LL UMN INCONT

MOT & SENS CORT UPPER L

WERNICKE
BROCA

GNTMA PAIN & SENS ↓

APHASIA IF IN DOMINANT L

HEMINEGLECT IF NON R

CONTRA HEMIANOPIA + MACULM SPARING

ALEXIA WITHOUT AGRAPHIA (DOM HEM, EXTENDING TO SPLENIUM OF CC)

PROSOPAGNOSIA (NONDOM)

FACE RSQ VF DEFCT T INVOLT

· PON, MED, LOWER MIDB
· G-S & G-TBUL TRACTS
· OCUL CN NUCLEI

PARAMEDIAN PONTINE RF

↓ HOR BUT VERT

IF MAS SPARED, CS (T) PRESERVED

QUADRIPLEGIA

↓ VOL FACIAL MOUTH & TONGUE MVTS

↓ PAIN & TEMP IPSI FACE

DYS ARTHRIA
DYS PHAGIA

SP(TRI) & TRACT

(AMB)

↓ PAIN & TEMP CONTRA

STT

PICA

VA

↓ MED SD (WALLEN BERG)

S-CBLT

LIMB ATAXIA IPSI

GAZE & VI F AN ↗↘ PONT

d DISC TOUCH VIB & CS PROPRIOC GNTMT

MLF

SCA

M LEM

PONT & CBL F

G-ST

M PONT SD

CRL BODY Gamma IPSi

Gamma Manipan

BA

VASC OCCLUSION
AS CAUSE
OF ISCHEMIA

HEMIPAR
AWES
APRAXIA
APATHY

GWD DNIMN
VF DEF
APLAJIA
HEMINEZ

HEMIANOPSIA

III VII XII PD HEMIPAR

V VI VII MYDRIAC ANAX
NYST MONNER

TETRAP PSEUDO BULB PAR

V X = NYST MONNER
HEMI ATAX
MICROLLY
HEMIANE
A(ON)I)
HYP

XII
HEMIPAR
HEMI ~ EST

ACA
MCA
ICA
ANT CHOR
P COM
PCA
BA
MIDB
P
RO

INE C9

Functional Deficits Seen in Common Vascular Infarcts