EDMONTON MEMO TO FILE 1 OF 3
OCT 9/08
RE: BERMUDA TOY CAR RACE - DENNIS SHASHA . RCVD SEPT 2/08

DENNIS,
THESE ARE MY THOUGHTS AT PRESENT - I'VE A GOOD FEELING ABOUT HOW THE SYSTEM OPERATES, BUT MY HEAD IS A LITTLE FUZZY ON THE MATH (ITS BEEN A LONG TIME MY FRIEND!)

CLOE - NICE CONCEPT FOR THE CARS, BUT HOW DO YOU GET THE CAR TO ACTUALLY FOLLOW A STRAIGHT LINE (CHORD) UNLESS YOU ARE REALLY DISCIPLINED & SKILLED (AS THE DISC IS MOVING THE ACTUAL CAR TRAJECTORY WOULD BE A CURVE....)
I'M SURE YOU CAN SOLVE THIS MECHANICAL/PERCEPTUAL ISSUE!

DENNIS AGAIN,
AS A CONTRARIAN I DISREGARDED ALL YOUR ADVICE & ∠'s A & B ETC. SO, HERE IS MY INITIAL ATTEMPT HOPING ITS NOT TOO GOOFY!

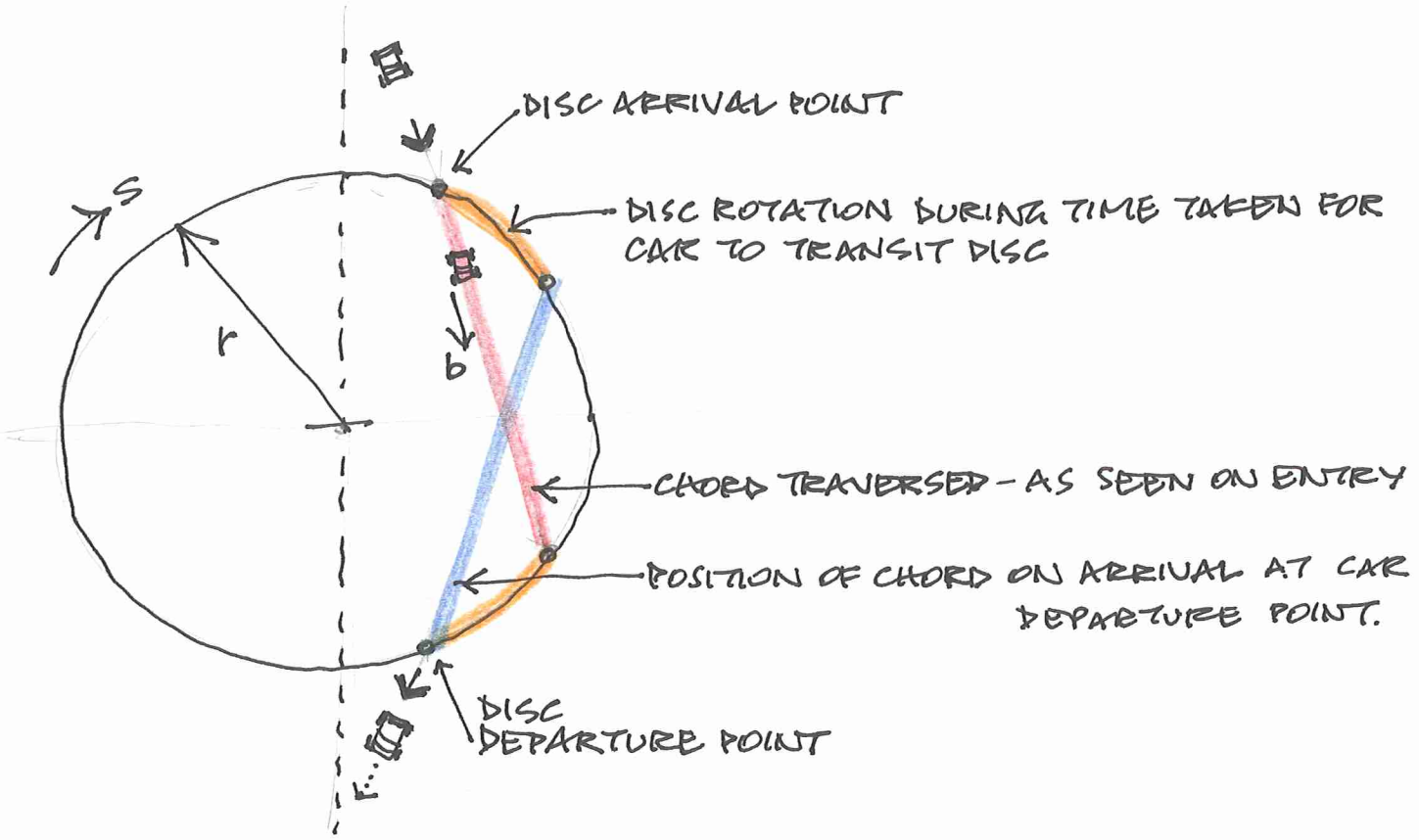


DIAGRAM (A)
(• CAR IS RELATIVELY FASTER THAN DISC IN THIS EXAMPLE)

BDA TOY CAR PROBLEM (CONT)

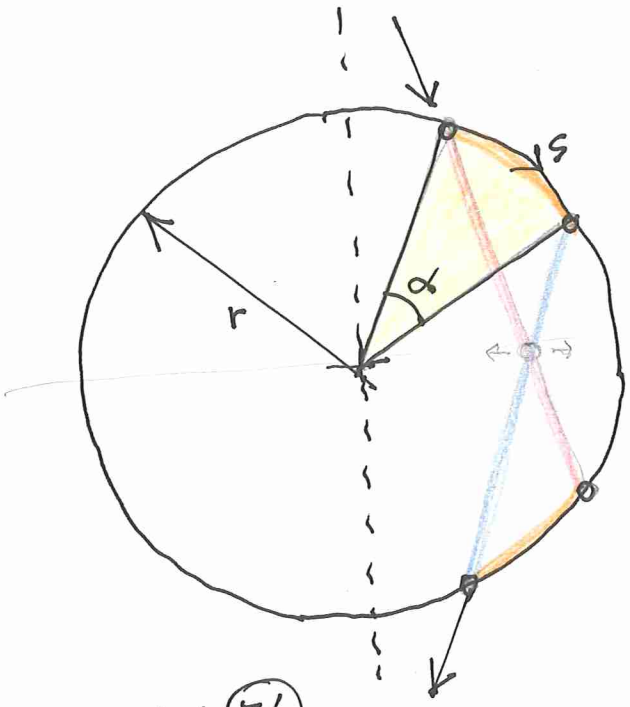


DIAGRAM (B')

α = ∠ OF DISC ROTATION IN TIME T

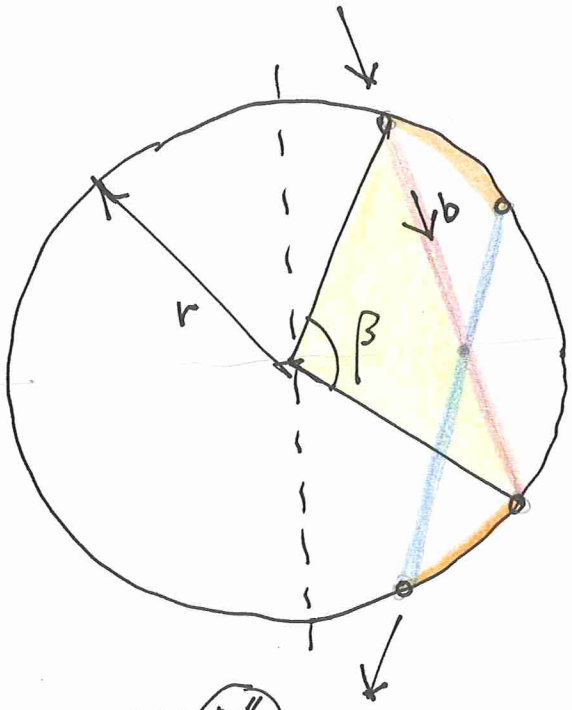


DIAGRAM (B'')

β = ∠ CHORD TRAVERSED BY CAR IN TIME T

1.0 ROTATION OF DISC THROUGH ∠α MUST EQUAL CAR TRAVERSE OF CHORD IN TIME.

2.0 IN TIME T DISC ROTATES $\frac{\alpha}{s}$

3.0 IN TIME T CAR TRAVERSES DISC THROUGH ∠β

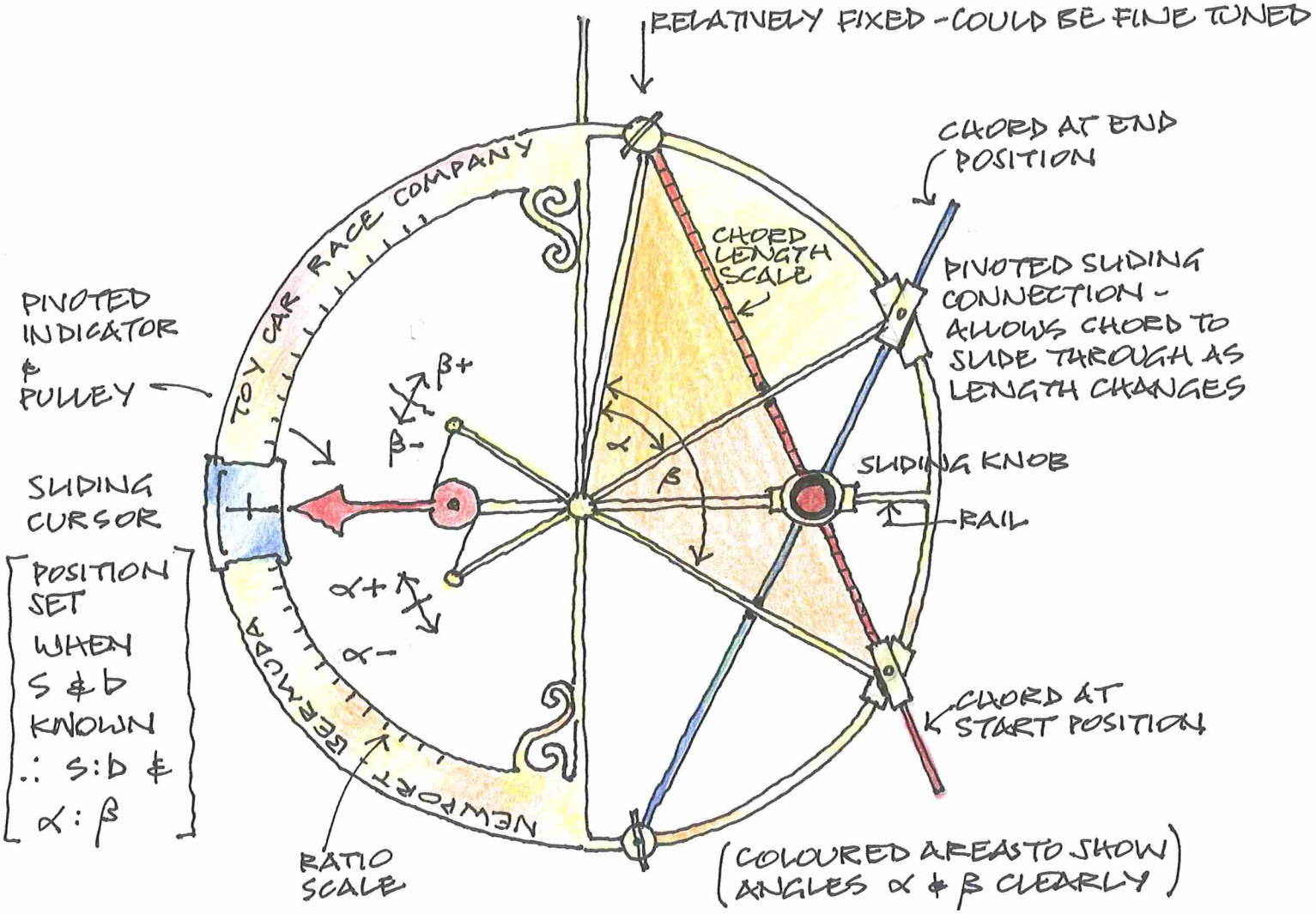
(NOTE: EVEN THOUGH ANGULAR VELOCITY OF CAR ON CHORD IS NOT THE SAME AS A POINT MOVING ON THE EDGE OF THE DISC - THE TOTAL TIME ELAPSED IS THE ONLY IMPORTANT THING)

IF CHORD LENGTH IS $2r \sin \beta/2$

THEN $T = \frac{2r \sin \beta/2}{b}$

4.0 ∴ $\frac{2r \sin \beta/2}{b} = \frac{\alpha}{s}$ OR $2rs \sin \beta/2 = b\alpha$ OR $\frac{b}{s} = \frac{2r \sin \beta/2}{\alpha}$

INITIAL DESIGN FOR A CALCULATING MACHINE (NON ELECTRONIC)



INSTRUCTIONS:

- SET CURSOR ON RATIO SCALE - COMPUTED AS PER ABOVE NOTES.
- SLIDE KNOB TO VARY RELATIVE VALUES OF ∠'s α & β AND CHORD POSITIONS - AND BRING CURSOR TO DESIRED OPTIMAL POSITION.
- READ OFF CHORD LENGTH - ADD TO OTHER ROUTE LENGTHS
- COMPLETE CALCULATION FOR MINIMUM TRAVEL TIME.

ONLY AVAILABLE IN BRASS