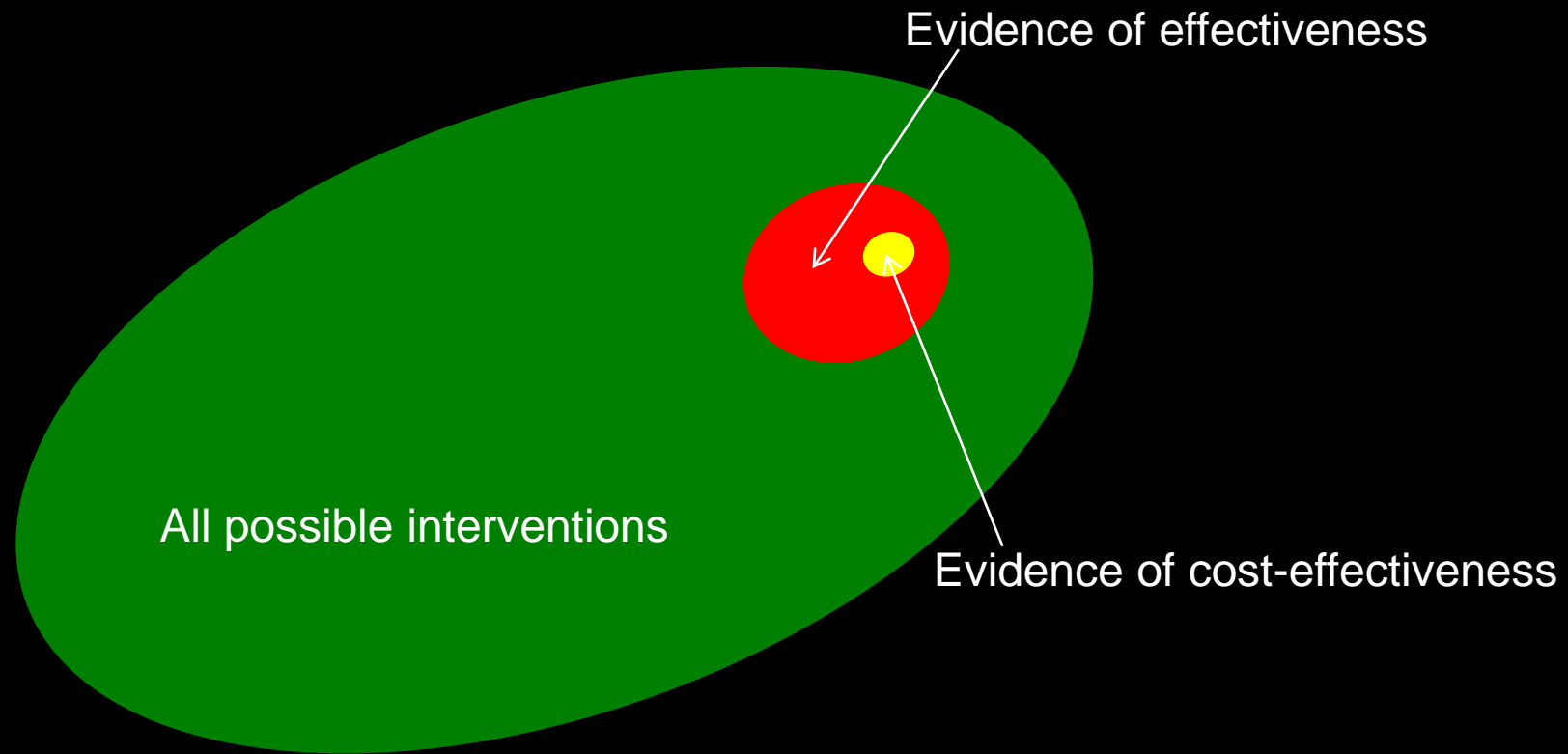
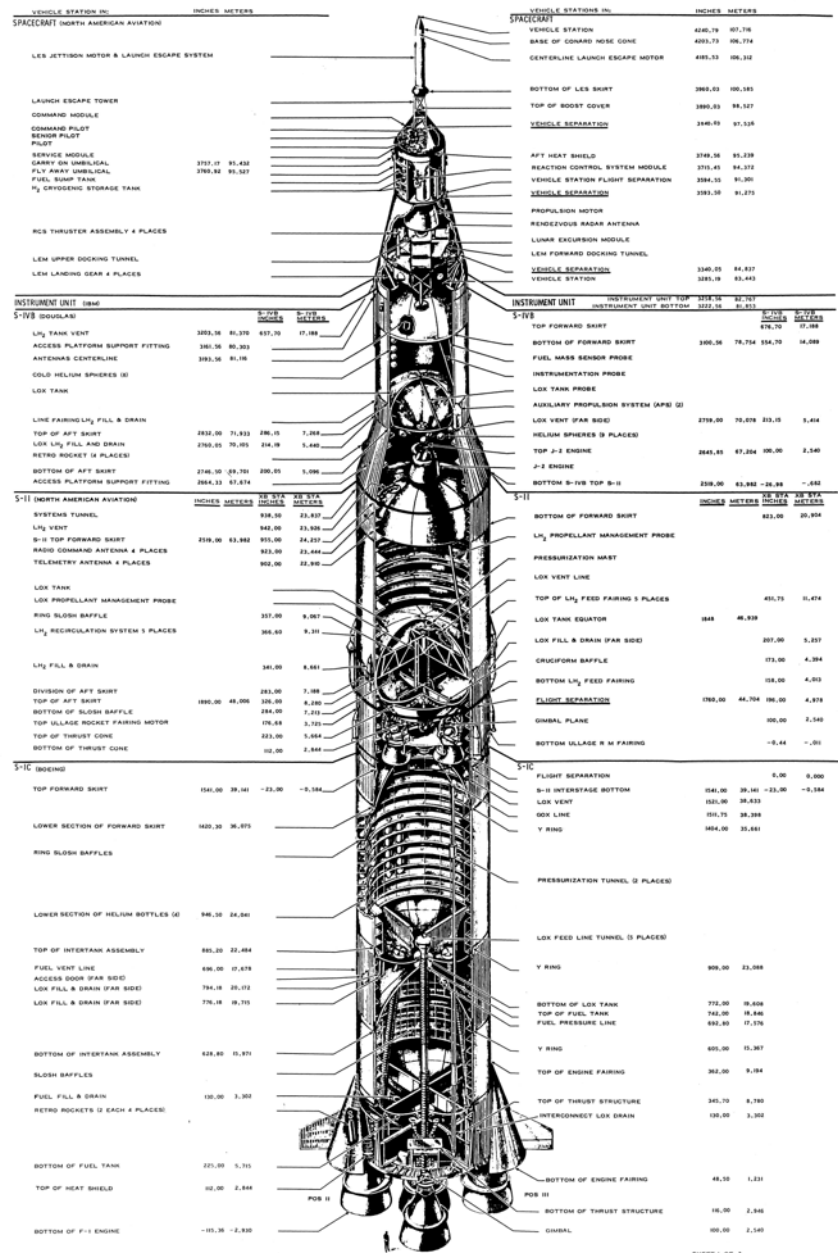


# The dangerous olive of evidence...



Complex or complicated?

# SATURN V APOLLO FLIGHT CONFIGURATION



VEHICLE STATION IN.	INCHES	METERS
SPACECRAFT NORTH AMERICAN AVIATION		
LES JETTISON MOTOR & LAUNCH ESCAPE SYSTEM		
LAUNCH ESCAPE TOWER		
COMMAND MODULE		
COMMAND PILOT		
SENIOR PILOT		
PILOT		
SERVICE MODULE		
GARRY ON UMBILICAL	373.12	9.532
PLY AWAY UMBILICAL	378.82	9.627
FUEL PUMP TANK		
1/2 CRYSTALINE STORAGE TANK		
RCS THRUSTER ASSEMBLY 4 PLACES		
LEM UPPER DOCKING TUNNEL		
LEM LANDING GEAR 4 PLACES		

INSTRUMENT UNIT	INCHES	METERS
S-IVB		
LIQ TANK VENT	383.16	9.737
ACCESS PLATFORM SUPPORT FITTING	381.16	9.702
ANTENNAS CENTERLINE	382.16	9.718
COLD HELIUM SPHERES (2)		
LOX TANK		
LINE FAIRING LIQ FILL & DRAIN		
TOP OF AFT SKIRT	252.00	6.401
LOX LIQ FILL AND DRAIN	216.00	5.491
RETRO ROCKET (4 PLACES)		
BOTTOM OF AFT SKIRT	216.00	5.491
ACCESS PLATFORM SUPPORT FITTING	264.12	6.724

S-II (NORTH AMERICAN AVIATION)	INCHES	METERS
SYSTEMS TUNNEL	838.50	21.302
LIQ VENT	842.00	21.381
S-II TOP FORWARD SKIRT	219.00	5.562
RADIO COMMAND ANTENNA 4 PLACES	833.00	21.199
TELEMETRY ANTENNA 4 PLACES	862.00	21.880
LOX TANK		
LOX PROPELLANT MANAGEMENT PROBE		
RING SLOSH BAFFLE	317.00	8.057
LIQ RECIRCULATION SYSTEM 3 PLACES	368.65	9.374
LIQ FILL & DRAIN	361.00	9.191
DIVISION OF AFT SKIRT	282.00	7.188
TOP OF AFT SKIRT	188.00	4.776
BOTTOM OF SLOSH BAFFLE	284.00	7.239
TOP ULLAGE ROCKET FAIRING MOTOR	176.84	4.491
TOP OF THRUST CORE	281.00	7.141
BOTTOM OF THRUST CORE	102.00	2.590

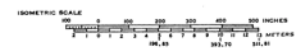
S-IC (BOEING)	INCHES	METERS
TOP FORWARD SKIRT	1541.00	39.141
LOWER SECTION OF FORWARD SKIRT	1420.30	36.075
RING SLOSH BAFFLES		
LOWER SECTION OF HELIUM BOTTLES (2)	346.00	8.840
TOP OF INTERTANK ASSEMBLY	885.00	22.524
FUEL VENT LINE	886.00	22.539
ACCESS DOOR (PAR SIDE)	794.18	20.172
LOX FILL & DRAIN (PAR SIDE)	776.14	19.715
BOTTOM OF INTERTANK ASSEMBLY	428.00	10.917
SLOSH BAFFLES		
FUEL FILL & DRAIN	100.00	2.540
RETRO ROCKETS (2 EACH 4 PLACES)		
BOTTOM OF FUEL TANK	225.00	5.715
TOP OF HEAT SHIELD	102.00	2.590
BOTTOM OF F-1 ENGINE	-101.16	-2.573

SPACECRAFT	VEHICLE STATION IN.	INCHES	METERS
VEHICLE STATION	4240.79	107.716	
BASE OF CONARD NOISE CONE	4251.73	108.174	
CENTERLINE LAUNCH ESCAPE MOTOR	4187.53	106.312	
BOTTOM OF LES SKIRT	3883.03	98.185	
TOP OF BOOST COVER	3885.03	98.227	
VEHICLE SEPARATION	3140.00	79.258	
AFT HEAT SHIELD	2749.36	69.838	
REACTION CONTROL SYSTEM MODULE	2715.45	69.372	
VEHICLE STATION FLIGHT SEPARATION	2584.15	65.800	
VEHICLE SEPARATION	2383.10	60.475	
PROPULSION MOTOR			
PROXIMITY RANGE ANTENNA			
LUNAR EXCURSION MODULE			
LEM FORWARD DOCKING TUNNEL			
VEHICLE SEPARATION	1340.00	34.027	
VEHICLE STATION	1285.19	32.643	

INSTRUMENT UNIT	INSTRUMENT UNIT TOP	INSTRUMENT UNIT BOTTOM	INCHES	METERS
S-IVB	3128.16	3127.07		
TOP FORWARD SKIRT	3100.36	78.734	14.089	
BOTTOM OF FORWARD SKIRT	3100.36	78.734	14.089	
FUEL MASS SENSOR PROBE				
INSTRUMENTATION PROBE				
LOX TANK PROBE				
AUXILIARY PROPULSION SYSTEM (APS) (2)				
LOX VENT (PAR SIDE)	2729.00	70.078	212.15	5.414
HELIUM SPHERES (4 PLACES)				
TOP J-2 ENGINE	2645.81	67.204	100.00	2.540
J-2 ENGINE				
BOTTOM S-IVB TOP S-II	2338.00	63.982	-28.90	-7.352

S-II	INCHES	METERS
BOTTOM OF FORWARD SKIRT	823.00	20.894
LIQ PROPELLANT MANAGEMENT PROBE		
PRESSURIZATION MAST		
LOX VENT LINE		
TOP OF LIQ FEED FAIRING 3 PLACES	451.75	11.474
LOX TANK EQUATOR	184	4.698
LOX FILL & DRAIN (PAR SIDE)	207.00	5.297
CROSSFORM BAFFLE	173.00	4.394
BOTTOM LIQ FEED FAIRING	108.00	2.743
FLIGHT SEPARATION	178.00	4.478
ORIGNAL PLANE	100.00	2.540
BOTTOM ULLAGE R M FAIRING	-8.44	-0.21

S-IC	INCHES	METERS
FLIGHT SEPARATION	5.00	0.127
S-II INTERSTAGE BOTTOM	1541.00	39.141
LOX VENT	100.00	2.540
SEK LINE	101.70	2.588
Y RING	104.00	2.641
PRESSURIZATION TUNNEL (2 PLACES)		
LOX FEED LINE TUNNEL (3 PLACES)		
Y RING	888.00	22.588
BOTTOM OF LOX TANK	772.00	19.608
TOP OF FUEL TANK	742.00	18.846
FUEL PRESSURE LINE	682.90	17.378
Y RING	605.00	15.367
TOP OF ENGINE FAIRING	362.00	9.191
TOP OF THRUST STRUCTURE	341.70	8.740
INTERCONNECTED LOX DRAIN	100.00	2.540
BOTTOM OF ENGINE FAIRING	41.15	1.041
FOR II		
FOR III		
BOTTOM OF THRUST STRUCTURE	16.00	0.406
CORRAL	100.00	2.540



SHEET 1 OF 2  
 REF: SATURN APOLLO SATURN AS-201  
**THE BOEING COMPANY**  
 SPACE DIVISION, LAUNCH SYSTEMS BRANCH  
 MOUNTAIN VIEW, ILL. 62240  
 SATURN V APOLLO  
 FLIGHT CONFIGURATION  
 DRAWING PREPARED BY: JAMES L. MARCH 1967  
 INTEROFFICE: JAMES L. MARCH 1967  
 ENGINEERING: DON SPRADUE

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Adaptation



Political  
lobbying  
PR offensive  
Media



Sugar  
tax

↑  
Minimise  
magnitude

Price  
restructuring  
Reformulation



Increased  
price

↑  
Minimise  
changes

Advertising  
Marketing  
Promotions



Reduced  
sales

↑  
Minimise  
impact

Divert  
attention



Reduced  
consumption

↑  
Obfuscate

Undermine  
the  
evidence



Reduced  
obesity

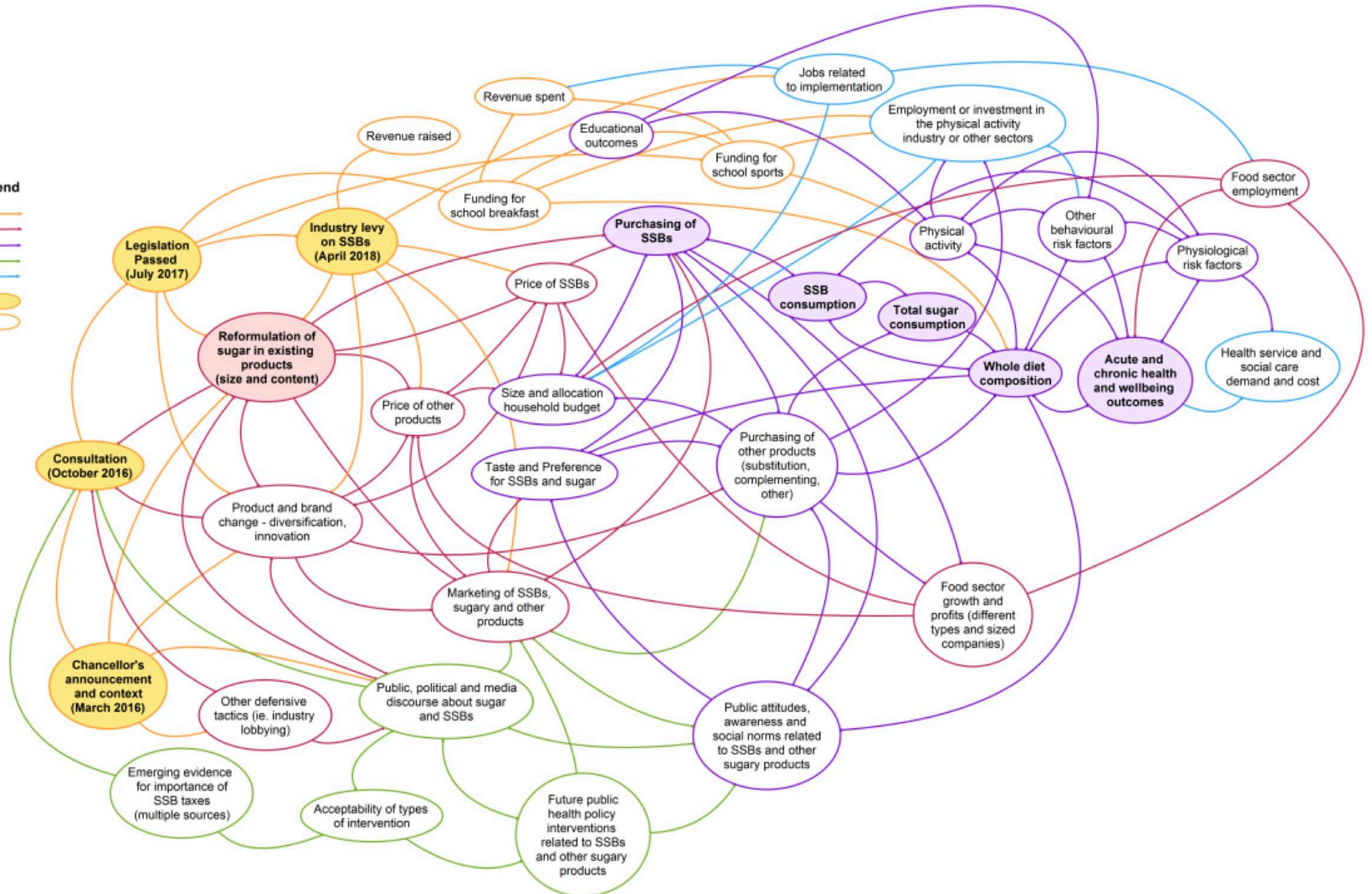
↑  
Manipulate  
the discourse



**System Legend**

- Government Actions
- Food Industry Actions
- Consumer Behaviour
- Public Acceptability and Discourse
- Other Sector Actions

Shaded - Concepts on primary pathway  
Non-shaded - Concepts beyond the primary pathway



# Key points

- The public health evidence base is structurally biased towards short term impacts of tightly defined, highly agentic, individual level interventions
- This promotes policy and practice aimed at proximal risk factors, may widen inequalities, and ignores the lessons of Geoffrey Rose
- (Complex) systems approaches can help us to understand the ways in which interventions influence systems, and how those systems adapt in response