Altshuller's Contradiction Matrix

Worsening Feature	Weight of moving objec	Weight of stationary object	Length of moving objec	Length of stationary object	Area of moving object	Area of stationary objec	Volume of moving object	Volume of stationary object	Speed	Force (Intensity)	Stress or pressure	Shape	Stability of the object's composition	Strength	Duration of action of moving object	Duration of action of stationary object	Temperature	Illumination intensity	Use of energy by moving object	Use of energy by stationary object	Power	Loss of Energy	Loss of Substance	Loss of Information	Loss of Time	Quantity of substance	Reliability	Measurement accuracy	Manufacturing precision	Object-affected harmfu factors	Object-generated harmful factors	Ease of manufacture	Ease of operation	Ease of repair	Adaptability or versatility	Device complexity	Difficulty of detecting and measuring	Extent of automation	Productivity
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39
1 Weight of moving objec	t +	-	15, 8, 29,34	-	29, 17, 38, 34	-	29, 2, 40, 28	-	2, 8, 15, 38	8, 10, 18, 37	10, 36, 37, 40	10, 14, 35, 40	1, 35, 19, 39	28, 27, 18, 40	5, 34, 31, 35	-	6, 29, 4, 38	19, 1, 32	35, 12, 34, 31	-	12, 36, 18, 31	6, 2, 34, 19	5, 35, 3, 31	10, 24, 35	10, 35, 20, 28	3, 26, 18, 31	1,3, 11,27	28, 27, 35, 26	28, 35, 26, 18	22, 21, 18, 27	22, 35, 31, 39	27, 28, 1, 36	35, 3, 2, 24	2, 27, 28, 11	29, 5, 15, 8	26, 30, 36, 34	28, 29, 26, 32	26, 35 18, 19	35, 3, 24, 37
2 Weight of stationary object	-	+	-	10, 1, 29, 35	-	35, 30, 13, 2	-	5, 35, 14, 2	-	8, 10, 19, 35	13, 29, 10, 18	13, 10, 29, 14	26, 39, 1, 40	28, 2, 10, 27	-	2, 27, 19, 6	28, 19, 32, 22	19, 32, 35	-	18, 19, 28, 1	15, 19, 18, 22	18, 19, 28, 15	5, 8, 13, 30	10, 15, 35	10, 20, 35, 26	19, 6, 18, 26	10, 28, 8, 3	18, 26, 28	10, 1, 35, 17	2, 19, 22, 37	35, 22, 1, 39	28, 1, 9	6, 13, 1, 32	2, 27, 28, 11	19, 15, 29	1, 10, 26, 39	25, 28, 17, 15	2, 26, 35	1, 28, 15, 35
3 Length of moving object	t 8, 15, 29, 34	-	+	-	15, 17, 4	-	7, 17, 4, 35	-	13, 4, 8	17, 10, 4	1, 8, 35	1, 8, 10, 29	1, 8, 15, 34	8, 35, 29, 34	19	-	10, 15, 19	32	8, 35, 24	-	1,35	7, 2, 35, 39	4, 29, 23, 10	1, 24	15, 2, 29	29, 35	10, 14, 29, 40	28, 32, 4	10, 28, 29, 37	1, 15, 17, 24	17, 15	1, 29, 17	15, 29, 35, 4	1,28, 10	14, 15, 1, 16	1, 19, 26, 24	35, 1, 26, 24	17, 24, 26, 16	14, 4, 28, 29
4 Length of stationary object		35, 28, 40, 29	-	+	-	17,7, 10,40	-	35, 8, 2,14	-	28, 10	1, 14, 35	13, 14, 15, 7	39, 37, 35	15, 14, 28, 26	-	1, 10, 35	3,35, 38,18	3, 25	-		12, 8	6, 28	10, 28, 24, 35	24, 26,	30, 29, 14		15, 29, 28	32, 28, 3	2, 32, 10	1, 18		15, 17, 27	2, 25	3	1,35	1,26	26		30, 14, 7, 26
5 Area of moving object	2, 17, 29, 4	-	14, 15, 18, 4	-	+	-	7, 14, 17, 4		29, 30, 4, 34	19, 30, 35, 2	10, 15, 36, 28	5, 34, 29, 4	11, 2, 13, 39	3, 15, 40, 14	6,3	-	2, 15, 16	15, 32, 19, 13	19, 32	-	19, 10, 32, 18	15, 17, 30, 26	10, 35, 2, 39	30, 26	26, 4	29, 30, 6, 13	29, 9	26, 28, 32, 3	2, 32	22, 33, 28, 1	17, 2, 18, 39	13, 1, 26, 24	15, 17, 13, 16	15, 13, 10, 1	15, 30	14, 1, 13	2, 36, 26, 18	14, 30, 28, 23	10, 26, 34, 2
6 Area of stationary object	t -	30, 2, 14, 18	-	26, 7, 9, 39	-	+	-		-	1, 18, 35, 36	10, 15, 36, 37		2, 38	40	,	2, 10, 19, 30	35, 39, 38		i		17, 32	17, 7, 30	10, 14, 18, 39	30, 16	10, 35, 4, 18	2, 18, 40, 4	32, 35, 40, 4	26, 28, 32, 3	2, 29, 18, 36	27, 2, 39, 35	22, 1, 40	40, 16	16, 4	16	15, 16	1, 18, 36	2, 35, 30, 18	23	10, 15, 17, 7
7 Volume of moving object	2, 26, 29, 40	-	1, 7, 4, 35	-	1, 7, 4, 17	-	+	-	29, 4, 38, 34	15, 35, 36, 37	6, 35, 36, 37	1, 15, 29, 4	28, 10, 1, 39	9, 14, 15, 7	6, 35, 4	-	34, 39, 10, 18	2, 13, 10	35	-	35, 6, 13, 18	7, 15, 13, 16	36, 39, 34, 10	2, 22	2, 6, 34, 10	29, 30, 7	14, 1, 40, 11	25, 26, 28	25, 28, 2, 16	22, 21, 27, 35	17, 2, 40, 1	29, 1, 40	15, 13, 30, 12	10	15, 29	26, 1	29, 26, 4	35, 34, 16, 24	10, 6, 2, 34
8 Volume of stationary object	-	35, 10, 19, 14	19, 14	35, 8, 2, 14	-		-	+	-	2, 18, 37	24, 35	7, 2, 35	34, 28, 35, 40	9, 14, 17, 15	-	35, 34, 38	35, 6, 4	:	-		30, 6		10, 39, 35, 34		35, 16, 32 18	35, 3	2,35, 16		35, 10, 25	34, 39, 19, 27	30, 18, 35, 4	35		1		1,31	2, 17, 26		35, 37, 10, 2
9 Speed	2, 28, 13, 38	-	13, 14, 8	-	29, 30, 34	-	7, 29, 34	-	+	13, 28, 15, 19	6, 18, 38, 40	35, 15, 18, 34	28, 33, 1, 18	8, 3, 26, 14	3, 19, 35, 5	-	28, 30, 36, 2	10, 13, 19	8, 15, 35, 38	-	19, 35, 38, 2	14, 20, 19, 35	10, 13, 28, 38	13, 26		10, 19, 29, 38	11, 35, 27, 28	28, 32, 1, 24	10, 28, 32, 25	1, 28, 35, 23	2, 24, 35, 21	35, 13, 8, 1	32, 28, 13, 12	34, 2, 28, 27	15, 10, 26	10, 28, 4, 34	3, 34, 27, 16	10, 18	
10 Force (Intensity)	8, 1, 37, 18	18, 13, 1, 28	17, 19, 9, 36	28, 10	19, 10, 15	1, 18, 36, 37	15, 9, 12, 37	2, 36, 18, 37	13, 28, 15, 12	+	18, 21, 11	10, 35, 40, 34	35, 10, 21	35, 10, 14, 27	19, 2		35, 10, 21	-	19, 17, 10	1, 16, 36, 37	19, 35, 18, 37	14, 15	8,35, 40,5		10, 37, 36	14, 29, 18, 36	3, 35, 13, 21	35, 10, 23, 24	28, 29, 37, 36	1,35, 40,18	13, 3, 36, 24	15,37, 18,1	1, 28, 3, 25	15, 1, 11	15, 17, 18, 20	26, 35, 10, 18	36, 37, 10, 19	2, 35	3, 28, 35, 37
11 Stress or pressure	10, 36, 37, 40	13, 29, 10, 18	35, 10, 36	35, 1, 14, 16	10, 15, 36, 28	10, 15, 36, 37	6, 35, 10	35, 24	6, 35, 36	36, 35, 21	+	35, 4, 15, 10	35, 33, 2, 40	9, 18, 3, 40	19, 3, 27		35, 39, 19, 2	-	14, 24, 10, 37		10, 35, 14	2, 36, 25	10, 36, 3, 37		37, 36, 4	10, 14, 36	10, 13, 19, 35	6, 28, 25	3, 35	22, 2, 37	2, 33, 27, 18	1,35, 16	11	2	35	19, 1, 35	2, 36, 37	35, 24	10, 14, 35, 37
12 Shape	8, 10, 29, 40	15, 10, 26, 3	29, 34, 5, 4	13, 14, 10, 7	5, 34, 4, 10		14, 4, 15, 22	7, 2, 35	35, 15, 34, 18	35, 10, 37, 40	34, 15, 10, 14	+	33, 1, 18, 4	30, 14, 10, 40	14, 26, 9, 25		22, 14, 19, 32	13, 15, 32	2, 6, 34, 14		4, 6, 2	14	35, 29, 3, 5		14, 10, 34, 17	36, 22	10, 40, 16	28, 32, 1	32, 30, 40	22, 1, 2, 35	35, 1	1, 32, 17, 28	32, 15, 26	2, 13, 1	1, 15, 29	16, 29, 1, 28	15, 13, 39	15, 1, 32	17, 26, 34, 10
13 Stability of the object's composition	21, 35, 2, 39	26, 39, 1, 40	13, 15, 1, 28	37	2, 11, 13	39	28, 10, 19, 39	34, 28, 35, 40	33, 15, 28, 18	10, 35, 21, 16	2,35, 40	22, 1, 18, 4	+	17, 9, 15	13, 27, 10, 35	39, 3, 35, 23	35, 1, 32	32, 3, 27, 16	13, 19	27, 4, 29, 18	32, 35, 27, 31	14, 2, 39, 6	2, 14, 30, 40		35, 27	15, 32, 35		13	18	35, 24, 30, 18	35, 40, 27, 39	35, 19	32, 35, 30	2,35, 10,16	35, 30, 34, 2	2, 35, 22, 26	35, 22, 39, 23	1, 8, 35	23, 35, 40, 3
14 Strength	1, 8, 40, 15	40, 26, 27, 1	1, 15, 8, 35	15, 14, 28, 26	3, 34, 40, 29	9, 40, 28	10, 15, 14, 7	9, 14, 17, 15	8, 13, 26, 14	10, 18, 3, 14	10, 3, 18, 40	10, 30, 35, 40	13, 17, 35	+	27, 3, 26		30, 10, 40	35, 19	19, 35, 10	35	10, 26, 35, 28	35	35, 28, 31, 40		29, 3, 28, 10	29, 10, 27	11, 3	3, 27, 16	3, 27	18, 35, 37, 1	15, 35, 22, 2	11, 3, 10, 32	32, 40, 25, 2	27, 11, 3	15, 3, 32	2, 13, 25, 28	27, 3, 15, 40	15	29, 35, 10, 14
15 Duration of action of moving object	19, 5, 34, 31	-	2, 19, 9	-	3, 17, 19	-	10, 2, 19, 30	-	3, 35, 5	19, 2, 16	19, 3, 27	14, 26, 28, 25	13, 3, 35	27, 3, 10	+	-	19, 35, 39	2, 19, 4, 35	28, 6, 35, 18		19, 10, 35, 38		28, 27, 3, 18	10	20, 10, 28, 18	3,35, 10,40	11, 2, 13	3	3, 27, 16, 40	22, 15, 33, 28	21, 39, 16, 22	27, 1, 4	12, 27	29, 10, 27	1, 35, 13	10, 4, 29, 15	19, 29, 39, 35	6,10	35, 17, 14, 19
16 Duration of action by stationary object	-	6, 27, 19, 16	-	1,40, 35	-		-	35, 34, 38	-				39, 3, 35, 23		-	+	19, 18, 36, 40		-		16		27, 16, 18, 38	10	28, 20, 10, 16	3, 35, 31	34, 27, 6, 40	10, 26, 24		17, 1, 40, 33	22	35, 10	1	1	2		25, 34,	1	20, 10, 16, 38
17 Temperature	36,22, 6, 38	22, 35, 32	15, 19, 9	15, 19, 9	3,35, 39,18	35, 38	34, 39, 40, 18	35, 6, 4	2, 28, 36, 30	35, 10, 3, 21	35, 39, 19, 2	14, 22, 19, 32	1,35, 32	10, 30, 22, 40	19, 13, 39	19, 18, 36, 40	+	32, 30, 21, 16	19, 15, 3, 17		2, 14, 17, 25	21, 17, 35, 38	21, 36, 29, 31		35, 28, 21, 18	3, 17, 30, 39	19, 35, 3, 10	32, 19, 24	24	22, 33, 35, 2	22, 35, 2, 24	26, 27	26, 27	4, 10, 16	2, 18, 27	2, 17, 16	3, 27, 35, 31	26, 2, 19, 16	15, 28, 35
18 Illumination intensity	19, 1, 32	2, 35, 32	19, 32, 16		19, 32, 26		2, 13, 10		10, 13, 19	26, 19, 6		32, 30	32, 3, 27	35, 19	2, 19, 6		32, 35, 19	+	32, 1, 19	32, 35, 1, 15	32	13, 16, 1, 6	13, 1	1,6	19, 1, 26, 17	1, 19	- / -	11, 15, 32	3, 32	15, 19	35, 19, 32, 39	19, 35, 28, 26	28, 26, 19	15, 17, 13, 16	15, 1, 19	6, 32, 13	32, 15	2,26, 10	2,25, 16
19 Use of energy by moving object	12,18,2 8,31	-	12, 28	-	15, 19, 25	-	35, 13, 18	-	8,15	16, 26, 21, 2	23, 14, 25	12, 2, 29	19, 13, 17, 24	5, 19, 9, 35	28, 35, 6, 18	-	19, 24, 3, 14	2, 15, 19	+	-	6, 19, 37, 18	12, 22, 15, 24	35, 24, 18, 5		35, 38, 19, 18	34, 23, 16, 18	19, 21, 11, 27	3, 1, 32		1,35, 6,27	2, 35, 6	28, 26, 30	19, 35	1, 15, 17, 28	15, 17, 13, 16	2, 29, 27, 28	35, 38	32, 2	12, 28, 35
20 Use of energy by stationary object	-	19, 9, 6, 27	-		-		-		- 35	36, 37			27, 4, 29, 18	35			- /	19, 2, 35, 32	-	+			28, 27, 18, 31			3, 35, 31	10, 36, 23			10, 2, 22, 37	19, 22, 18	1,4					19, 35, 16, 25	1	1,6
21 Power	8, 36, 38, 31	19, 26, 17, 27	1, 10, 35, 37		19, 38	17, 32, 13, 38	35, 6, 38	30, 6, 25	15, 35, 2	26, 2, 36, 35	22, 10, 35	29, 14, 2, 40	35, 32, 15, 31	26, 10, 28	19, 35, 10, 38	16	2, 14, 17, 25	16, 6, 19	16, 6, 19, 37		+	10, 35, 38	28, 27, 18, 38	10, 19	35, 20, 10, 6	4, 34, 19	19, 24, 26, 31	32, 15, 2	32, 2	19, 22, 31, 2	2, 35, 18	26, 10, 34	26, 35, 10	35, 2, 10, 34	19, 17, 34	20, 19, 30, 34	19, 35, 16	28, 2, 17	28, 35, 34
22 Loss of Energy	15, 6, 19, 28	19, 6, 18, 9	7, 2, 6, 13	6, 38, 7	, 15, 26, 17, 30	17,7, 30,18	7, 18, 23	7	16, 35, 38	36, 38			14, 2, 39, 6	26	20/00		19, 38, 7	1, 13, 32, 15			3, 38	+	35, 27, 2, 37	19, 10	10, 18, 32, 7	7, 18, 25	11, 10, 35	32		21, 22, 35, 2	21, 35, 2, 22		35, 32, 1	2, 19		7,23	35, 3, 15, 23	2	28, 10, 29, 35
23 Loss of substance	35, 6, 23, 40	35, 6, 22, 32	14, 29, 10, 39	10, 28,24	35, 2, 10, 31	10, 18, 39, 31	1, 29, 30, 36	3, 39, 18, 31	10, 13, 28, 38	14, 15, 18, 40	3,36, 37,10	29, 35, 3, 5	2, 14, 30, 40	35, 28, 31, 40	28, 27, 3, 18	27, 16, 18, 38	21, 36, 39, 31	1, 6, 13	35, 18, 24, 5	28, 27, 12, 31	28, 27, 18, 38	35, 27, 2, 31	+		15, 18, 35, 10	6, 3, 10, 24	10, 29, 39, 35	16, 34, 31, 28	35, 10, 24, 31	33, 22, 30, 40	10, 1, 34, 29	15, 34, 33	32, 28, 2, 24	2,35, 34,27	15, 10, 2	35, 10, 28, 24	35, 18, 10, 13	35, 10, 18	28, 35, 10, 23
24 Loss of Information	10, 24, 35	10, 35,	1,26	26	30, 26	30, 16		2, 22	26, 32						10	10		19			10, 19	19, 10		+	24, 26, 28, 32	24, 28, 35	10, 28, 23			22, 10, 1	10, 21, 22	32	27, 22				35, 33	35	13, 23, 15
25 Loss of Time	10, 20,	10, 20,	15, 2, 29	30, 24,	26, 4,	10, 35,	2, 5, 34, 10	35, 16, 32, 18		10, 37,	37, 36.4	4, 10, 34, 17	35, 3,	29, 3, 28, 18	20, 10, 28, 18	28, 20, 10, 16	35, 29, 21, 18	1, 19, 26, 17	35, 38, 19, 18	1	35, 20,	10, 5,	35, 18, 10, 39	24, 26, 28, 32	+	35, 38, 18, 16	10, 30, 4	24, 34, 28, 32	24, 26, 28, 18	35, 18, 34	35, 22, 18, 39	35, 28, 34, 4	4, 28, 10, 34	32, 1, 10	35, 28	6, 29	18, 28, 32, 10	24, 28, 35, 30	
26 Quantity of substance	35, 6,	27, 26,	29, 14, 35, 18	11/0	15, 14,	2, 18,	15, 20,	02,10	35, 29, 34, 28	35, 14,	10, 36,	35, 14	15, 2, 17, 40	14, 35, 34, 10	3,35,	3, 35,	3, 17,	20/1/	34, 29,	3, 35, 31	35	7,18,	6, 3, 10, 24	24, 28,	35, 38, 18, 16	+	18, 3, 28, 40	13, 2,	33, 30	35, 33,	3, 35,	29, 1, 35, 27	35, 29,	2, 32,	15, 3, 29	3, 13, 27, 10	3, 27,	8,35	13, 29,
27 Reliability	3, 8,	3, 10,	15, 9,	15, 29, 28, 11	17, 10,	32, 35, 40, 4	3, 10, 14, 24	2, 35, 24	21, 35, 11, 28	8, 28, 10, 3	10, 24, 35, 19	35, 1, 16, 11	177 10	11, 28	2, 35,	34, 27,	3,35, 10	11, 32, 13	21, 11, 27, 19	36, 23	21, 11, 26, 31	10, 11,	10, 35, 29, 39	10, 28	10, 30,	21, 28, 40.3	+	32, 3, 11, 23	11, 32, 1	27, 35,	35, 2, 40, 26	00/21	27, 17, 40	1, 11	13, 35, 8, 24	13, 35,	27,40,	11, 13, 27	1, 35, 29, 38
28 Measurement accuracy	32, 35, 26, 28	28, 35,	28, 26,	32, 28,	26, 28,	26, 28,	32, 13,		28, 13, 32, 24	32, 2	6, 28, 32	6, 28, 32	32, 35, 13	28, 6, 32	28, 6,	10, 26, 24	6, 19, 28, 24	6, 1, 32	3, 6, 32		3, 6, 32	26, 32, 27	10, 16, 31, 28		24, 34, 28, 32	2, 6, 32	5, 11,	+		28, 24, 22, 26	3, 33, 39, 10	6,35, 25,18	1, 13, 17, 34	1, 32, 13, 11	13, 35,	27, 35,	26, 24, 32, 28	28, 2, 10, 34	10, 34, 28, 32
29 Manufacturing precision	n 28, 32, 13, 18	28, 35,	10, 28,	2, 32,	28, 33,	2, 29,	32, 23,	25, 10, 35	10, 28,	28, 19, 34, 36	3,35	32, 30, 40	30, 18	3, 27	3, 27, 40		19, 26	3, 32	32, 2		32, 2	13, 32,	35, 31,		32, 26, 28, 18	32, 30	11, 32,		+	26, 28,	4, 17,	20/10	1, 32,	25, 10		26, 2,	02,20	26, 28,	10, 18,
30 Object-affected harmful	1 22, 21,	2, 22,	17, 1,	1, 18	22, 1,	27, 2,	22, 23,	34, 39,	21, 22,	13, 35,	22, 2, 37	22, 1,	35, 24,	18, 35, 37, 1	22, 15,	17, 1,	22, 33,	1, 19,	1, 24, 6 27	10, 2,	19, 22, 31 2	21, 22,	33, 22,	22, 10,	35, 18,	35, 33,	27, 24,	28, 33,	26, 28,	+	01,20	24, 35,	2, 25,	35, 10,	35, 11,	22, 19,	22, 19, 29, 40	33, 3,	22, 35,
31 Object-generated harmful factors	19, 22,	35, 22,	17, 15,		17, 2,	22, 1,	17, 2,	30, 18,	35, 28,	35, 28,	2, 33, 27, 18	35,1	35, 40,	15, 35,	15, 22,	21, 39,	22, 35,	19, 24,	2, 35, 6	19, 22,	2,35,	21, 35,	10, 1,	10, 21,	1, 22	3, 24,	24, 2, 40, 39	3, 33,	4, 17,		+	~	20,07		22,01	19, 1,	2, 21,	2	22, 35,
32 Ease of manufacture	28, 29,	1, 27,	1, 29,	15, 17, 27	13, 1, 26, 12	16,40	13, 29,	35	35, 13,	35, 12	35, 19,	1,28, 13.27	11, 13,	1, 3,	27, 1, 4	35,16	27, 26,	28, 24,	28, 26, 27, 1	1,4	27, 1,	19,35	15, 34,	32, 24, 18, 16	35, 28, 34_4	35, 23,	10, 37	1, 35,	34,20	24, 2		+	2, 5, 13, 16	35, 1, 11 9	2, 13,	27, 26,	6, 28, 11 1	8, 28, 1	35, 1,
33 Ease of operation	25, 2,	6, 13,	1, 17,	21	1, 17,	18, 16,	1, 16,	4, 18,	18, 13,	28, 13	2, 32,	15, 34,	32, 35,	32, 40,	29, 3,	1, 16,	26, 27,	13, 17,	1, 13,		35, 34,	2, 19,	28, 32,	4, 10,	4, 28,	1, 24	17, 27,	25, 13,	1, 32,	2, 25,		2, 5, 12	+	12, 26,	15, 34,	32, 26,	11, 1	1, 34,	15, 1,
34 Ease of repair	2, 27	2, 27,	1, 28,	3, 18,	15, 13,	16, 25	25, 2,	1	34,9	1, 11,	13	1,13,	2,35	11, 1, 2 0	11, 29,	1	4,10	15, 1,	15, 1,		15, 10,	15, 1,	2, 35,	27,22	32, 1,	2,28,	11, 10,	10, 2,	25, 10	35, 10,		1,35,	1, 12,	+	7, 1, 4,	35, 1,		34, 35,	1, 32,
35 Adaptability or	1, 6,	19, 15,	35, 1,	1, 35,	35, 30,	15, 16	15, 35,		35, 10,	15, 17,	35, 16	15, 37,	35, 30,	35, 3,	13, 1,	2, 16	27, 2,	6, 22,	19, 35, 20, 12		19, 1,	18, 15,	15, 10,		35, 28	3, 35,	35, 13,	35, 5,		35, 11,		1, 13,	15, 34,	1,16,	+	15, 29,	1	27, 34,	35, 28,
36 Device complexity	26, 30,	2, 26,	$\frac{29,2}{1,19,}$	26	14, 1,	6, 36	34, 26,	1,16	34, 10, 28	26, 16	19, 1, 35	29, 13, 28, 15	2, 22,	2, 13,	10, 4,		2,17,	20, 1 24, 17,	27, 2,		20, 19,	10, 35,	2, 13 35, 10, 28, 20		6, 29	13, 3, 27, 10	13, 35, 1	2, 26,	26, 24,	22, 19,	19, 1	27, 26,	27,9,	1,13	29, 15,	+	15, 10,	15,1,	12, 17,
37 Difficulty of detecting	27, 26,	6, 13,	16, 17, 26, 24	26	2, 13,	2, 39,	29, 1,	2, 18,	3, 4,	30, 28,	35, 36,	27, 13,	11, 22,	27, 3,	19, 29,	25, 34,	3, 27,	2, 24,	35, 38	19, 35,	18, 1,	35, 3,	1, 18,	35, 33,	18, 28,	3, 27,	27, 40,	26, 24,	32	22, 19,	2, 21	5, 28,	2,5	12, 26	1,15	15, 10, 37, 20	+	2 4 34, 21	35, 18
38 Extent of automation	28, 26,	28, 26,	14, 13,	23	17, 14,	50, 10	⁴ , 10 35, 13,	20, 31	28, 10	2,35	13, 35	1, 39	18,1	25, 13	6,9	0, 33	26, 2,	8, 32,	2, 32,	10	28, 2,	23, 28	35, 10,	35, 33	24, 28,	35, 13	20, 0 11, 27, 22	28, 26,	28, 26,	2,33	2	1, 29	1, 12,	1,35,	27, 4,	15, 24,	34, 27,	+	5, 12,
39 Productivity	35, 26,	28, 27,	17, 26	30, 7, 14, 26	10, 26, 34, 31	10, 35,	2, 6, 34, 10	35, 37,		28, 15,	10, 37, 14	1, 15 14, 10, 34, 40	35, 3,	29, 28,	35, 10,	20, 10,	35, 21, 28, 10	26, 17, 19 1	35, 10, 38, 10	1	35, 20, 10	28, 10,	28, 10, 35, 22	13, 15, 23	55, 30	35, 38	1, 35, 10, 38	10, 34 1, 10, 34, 28	10, 25 18, 10, 32, 1	22, 35,	35, 22, 18, 39	35, 28, 2 24	1,28, 7 10	1, 32,	1, 35 1, 35, 28, 37	12, 17, 28, 24	25 35, 18, 27, 2	5, 12, 35, 26	+
	L=1, 37	10,0	1 =0, 00	1 17, 20	101,01	1///	01,10	10/2		10,00	14	01,40	LL, 37	10, 10	L, 10	10,00	<u></u> , 10	1/1	100,19	1	10	1 - 1, 33	00,20	23			10,00	51,20	U4/1	10,24	10,02	<i>_, _</i> +	1,10	10,20	0,01	, _+	-1, 4	55,20	<u>ا</u>

Numbers refer to the principles in the "40 Principles" that are most likely to solve problems displaying this contradiction.

Blank or (-) Use all 40 Principles

Explanation of the 39 Features of the Contradiction Matrix. By Ellen Domb, Joe Miller, and Ellen MacGran. TRIZ Journal, Nov.1998.

	Title	Explanation
	Moving objects	Objects which can easily change position in space, either on their own, or as a result of external forces. Vehicles and objects designed to be portable are the basic members of this class.
	Stationary objects	Objects which do not change position in space, either on their own, or as a result of external forces. Consider the conditions under which the object is being used.
1	Weight of moving object	The mass of the object, in a gravitational field. The force that the body exerts on its support or suspension.
2	Weight of stationary object	The mass of the object, in a gravitational field. The force that the body exerts on its support or suspension, or on the surface on which it rests.
3	Length of moving object	Any one linear dimension, not necessarily the longest, is considered a length.
<u>4</u> 5	Length of stationary object Area of moving object	Same. A geometrical characteristic described by the part of a plane enclosed by a line. The part of a surface occupied by the object. OR the square measure of the surface, either internal or external, of an object.
6 7	Area of stationary object Volume of moving object	Same The cubic measure of space occupied by the object. Length x width x height for a rectangular object, height x area for a cylinder, etc.
8	Volume of stationary object	Same
9	Speed	The velocity of an object; the rate of a process or action in time.
10	Force	Force measures the interaction between systems. In Newtonian physics, force = mass X acceleration. In TRIZ, force is any interaction that is intended to change an object's condition.
<u>11</u> 12	Stress or pressure	Force per unit area. Also, tension. The external contours, appearance of a system
13	Stability of the object's composition	The wholeness or integrity of the system; the relationship of the system's constituent elements. Wear, chemical decomposition, and disassembly are all decreases in stability. Increasing entropy is decreasing stability.
<u>14</u> 15	Strength Duration of action by a moving	The extent to which the object is able to resist changing in response to force. Resistance to breaking.
16	object Duration of action by a stationary object	duration of action. Also, durability.
17	Temperature	The thermal condition of the object or system. Loosely includes other thermal parameters, such as heat capacity,
18	Illumination intensity	that affect the rate of change of temperature. Light flux per unit area, also any other illumination characteristics of the system such as brightness, light quality,
19	Use of energy by moving object	The measure of the object's capacity for doing work. In classical mechanics, Energy is the force X distance. This includes the use of energy provided by the super-system (such as electrical energy or heat.) Energy required to do a particular job.
20	Use of energy by stationary object	same
21	Power	The time rate at which work is performed. The rate of use of energy.
22	Loss of substance	Use of energy that does not contribute to the job being done. See 19. Reducing the loss of energy sometimes requires different techniques from improving the use of energy, which is why this is a separate category.
23		subsystems.
25		sensory data such as aroma, texture, etc.
26	Quantity of substance Quantity of	time reduction" is a common term.
20	things Reliability	partially, permanently or temporarily.
28	Measurement accuracy	The closeness of the measured value to the actual value of a property of a system. Reducing the error in a measurement increases the accuracy of the measurement.
29	Manufacturing precision, production precision.	The extent to which the actual characteristics of the system or object match the specified or required characteristics.
30	External harm affects the object or system	Susceptibility of a system to externally generated (harmful) effects.
31	Object (or system)-generated harmful factors	A harmful effect is one that reduces the efficiency or quality of the functioning of the object or system. These harmful effects are generated by the object or system, as part of its operation.
32	Ease of manufacture; more generally, ease of production	The degree of facility, comfort or effortlessness in manufacturing or fabricating or producing the object/system.
33	Ease of operation	Simplicity: The process is NOT easy if it requires a large number of people, large number of steps in the operation, needs special tools, etc. "Hard" processes have low yield and "easy" process have high yield; they are easy to do right.
34	Ease of repair	Quality characteristics such as convenience, comfort, simplicity, and time to repair faults, failures, or defects in a system.
35	Adaptability or versatility	The extent to which a system/object positively responds to external changes. Also, a system that can be used in multiple ways under a variety of circumstances.
36	Device or system complexity	The number and diversity of elements and element interrelationships within a system. The user may be an element of the system that increases the complexity. The difficulty of mastering the system is a measure of its complexity
37	Difficulty of detecting and measuring	Measuring or monitoring systems that are complex, costly, require much time and labor to set up and use, or that have complex relationships between components or components that interfere with each other all demonstrate "difficulty of detecting and measuring." Increasing cost of measuring to a satisfactory error is also a sign of increased difficulty of measuring.
38	Extent of automation	The extent to which a system or object performs its functions without human interface. The lowest level of automation is the use of a manually operated tool. For intermediate levels, humans program the tool, observe its operation, and interrupt or re-program as needed. For the highest level, the machine senses the operation
39	Productivity	The number of functions or operations performed by a system per unit time. The smaller the time for a unit function or operation, the higher the productivity. The output per unit time, or the cost per unit output.

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