Some Principles Are More Common Than Others - 40 Management Principles In Frequency Order

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Introduction

Preceding the official launch of the business and management version of the Hands-On Systematic Innovation book (Reference 1), this article examines some of the research conducted for the book relating to the 40 Inventive Management Principles. Specifically of interest here has been a desire to generate some kind of a priority sequence of the Principles equivalent to that found in the technical version of the toolkit (Reference 2). The book version of the article presents frequency of use data for each of the parameters in the business conflict matrix. Our focus here takes on a more global perspective, and tries to identify which Principles are used more frequently than others when averaged across *all* business and management applications.

Such a 'global average' sequence is inevitably going to lose much of the richness of the data collected in the preparation of the book. For many people, however, the alternatives - the Contradiction Matrix tools in the 'classical' (Reference 3), 2003-updated (Reference 4), business and software forms – are over-complicated and difficult to use. The normal alternative in this situation is to attempt to use all 40 of the Principles as solution generation aids. This article is aimed at helping those people that have no interest in using the business matrix tool, but would nevertheless like to use their time more efficiently than randomly working through all 40 Principles. All short-cuts, of course, lay open the possibility of missing something or getting something wrong. The human brain, however, has evolved to want to take short-cuts at every available opportunity. We want short-cuts to save time, but on the other hand we don't want short-cuts because they lay open the possibility of error. While the priority sequence can't claim to completely eliminate this contradiction, it at least allows the possibility of using our time more efficiently than the random sequence approach.

Frequency Sequence Of The Inventive Principles

Reference 2 contains a list of Inventive Principles ordered by their frequency of occurrence in the original 'classical' Contradiction Matrix. The equivalent prioritized list of Inventive Principles based on the content of the (new and updated) business conflict matrix presented in Reference 1 is presented here. The list has been compiled using the same calculation method as Reference 2 in order to maintain as much consistency as possible between the two. Based on the frequency of occurrence in the new business Matrix, then, the sequence of Principles is (most likely first):-

	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th
0	**35**	**2**	**25**	**10**	**13**	**3**	**1**	**15**	**5**	**24**
+10	**6**	**37**	**28**	**7**	**29**	**40**	**19**	**26**	**17**	**27**
+20	**4**	**23**	**11**	**22**	**30**	**12**	**32**	**9**	**31**	**38**
+30	**16**	**14**	**39**	**18**	**20**	**34**	**33**	**8**	**21**	**36**

Hence, we see that Inventive Principle 35 is the most commonly used; Principle 2, the second most common, and so on through to Principle 36 down in 40th place.

The list is also reproduced in a slightly different presentation format in the fourth column of Table 1 below. The Table also reproduces the ranking of Principles from Matrix 2003 (see Reference 5 for a more detailed analysis of Matrix 2003 versus classical placings), and then the relative changes between business and technical Principles sequences.

Inventive Principle	**Classical TRIZ Ranking**	**Matrix 2003 Ranking**	**Business Matrix Ranking**	**Change** (Classical - Business)	**Change** (Matrix 2003 - Business)
1	3	7	7	-4	-
2	5	5	2	+3	+3
3	12	2	6	+6	-4
4	24	10	21	+3	-11
5	33	12	9	+24	+3
6	20	27	11	+9	+16
7	34	17	14	+20	+3
8	32	37	38	-6	-1
9	39	24	28	+11	-4
10	2	8	4	-2	+4
11	29	39	23	+6	+16
12	37	19	26	+11	-7
13	10	3	5	+5	-2
14	21	15	32	-11	-17
15	6	14	8	-2	+6
16	16	28	31	-15	-3
17	19	9	19	-	-10
18	8	25	34	-26	-9
19	7	11	17	-10	-6
20	40	40	35	+5	+5
21	35	32	39	-4	-7
22	22	36	24	-2	+12
23	36	33	22	+14	+11
24	18	6	10	+8	-4
25	28	13	3	+25	+10
26	11	23	18	-7	+5
27	13	35	20	-7	+15
28	4	4	13	-9	-9
29	14	26	15	-1	+11
30	25	22	25	-	-3
31	30	16	29	+1	-13
32	9	21	27	-18	-6
33	38	38	37	+1	+1
34	15	31	36	-21	-5
35	1	1	1	-	-
36	27	30	40	-13	-10
37	26	20	12	+14	+8
38	31	34	30	+1	-4
39	23	29	33	-10	-4
40	17	18	16	+1	+2

Figure 1: Comparison Of Classical, Matrix 2003 and New Business Matrix

The ‘change’ columns indicates that there have been some quite significant shifts that have taken place between the classical matrix, Matrix 2003 and the new business matrix. These differences form the subject of the remainder of the article.

Biggest Risers

The top nine biggest rising Inventive Principles comparing the classical technical matrix to the business matrix, in decreasing order of change, are:-

25, 5, 7, 23, 37, 9, 12, 6, 24

It is worth highlighting some of the differences that this list describes:

Principle 25, Self-Service, is the biggest single riser in the new list. It has climbed from 28th place in the original list to 3rd place in the new Matrix; a rise of 25 places. The rise is also striking relative to the placing of this Principle in the Matrix 2003 list – where the Principle was seen to rise from 28th to 10th place. It is doubtful that the underlying reasons for the climb will never be completely understood, but an at least partial explanation appears to rest with the relative ease of delivering a self-x solution in a business context than in a technical one. This is not to say that the achievement of a ‘self-organising’ business structure to take one example is by any means ‘easy’, but once such an intention has been defined it is considerably easier to achieve than an equivalent technical self-x solution. Here, as in many business situations, once we have a good definition of a problem or solution direction, the solving part becomes relatively easy. This is rarely the case in a technical sense – particularly for ‘self’ solutions– where a variety of substantial technical obstacles may require to be overcome before, say, a self-cooling soda can concept may be translated from good definition to practical reality.

Principles 5 and 6, Merging and Universality respectively, are the second and eighth biggest risers on the list. Principle 5 was also a big riser in Matrix 2003. Deployment of either of these two Principles is highly indicative of systems in the ‘decreasing complexity’ phase of the system complexity characteristic described in Figure 2.

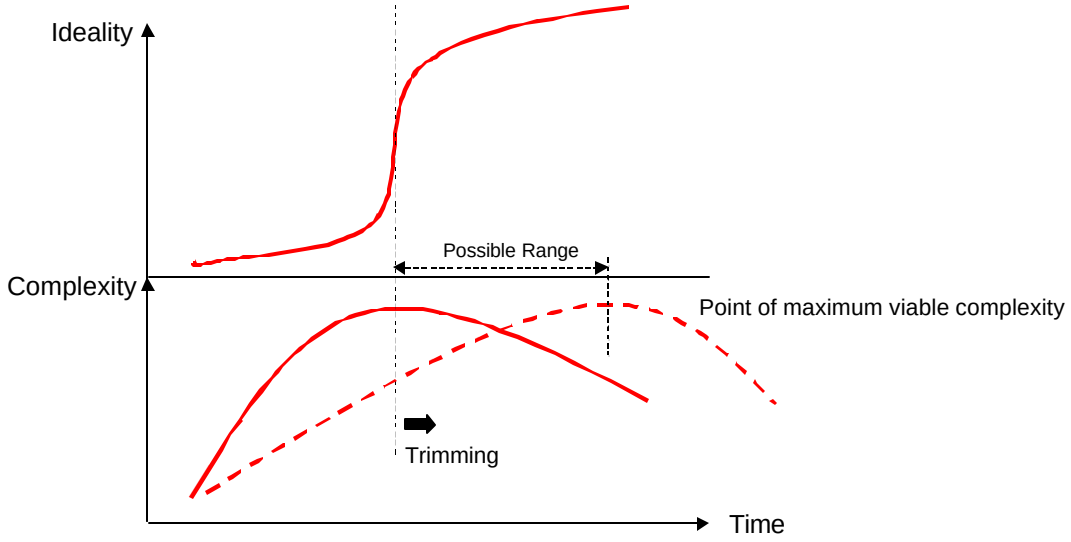

Figure 2: System Complexity Characteristic and Connection To Principle 5

The likely implication here is that there are many more business systems at this decreasing complexity stage than there were technical systems at the same stage when the original Matrix was constructed. Actually, we might chose to qualify this statement a

little by recognizing that management *case-studies* are much more likely to emerge when companies are at the mature end of their current s-curve. During the growth period of the s-curve, the biggest problem faced by companies is often how to make money fast enough. Significant conflicts and contradictions emerge only after the model approaches maturity. Examination of case studies where Principle 5 or 6 have been used most frequently reveals businesses finding win-win relationships with their 'complementor' (Reference 6) organizations – Figure 3.

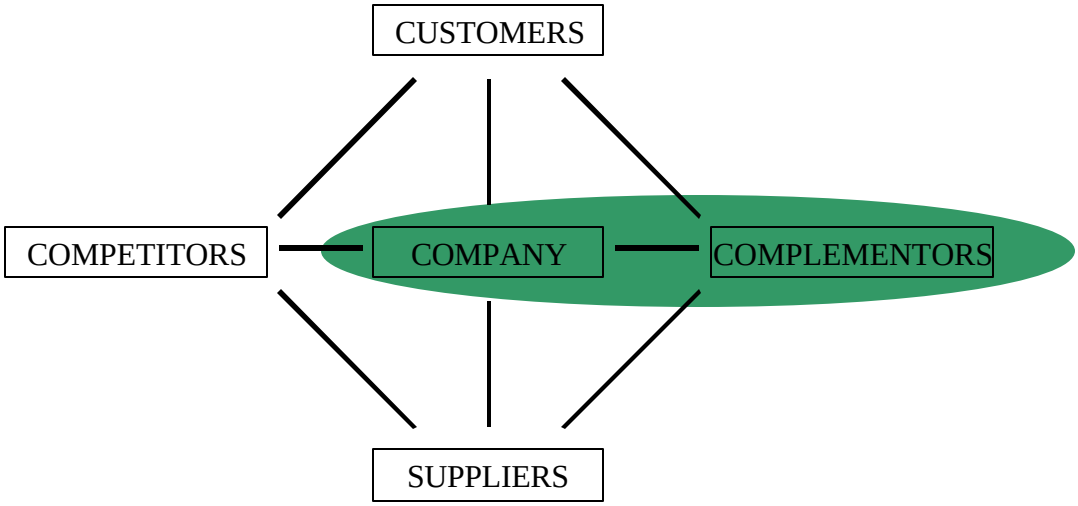

Figure 3: Complementor Organisations

Typical examples here might include the integration of toothpastes into chewing gums, or cereals into dessert yoghurts or combined real estate finance and building – where the house-builder and the bank work in combination to offer an integrated package for home buyers.

Two perhaps surprising risers up the sequence list are Principle 23, Feedback and Principle 37, Relative Change ('Thermal Expansion' in its technical context). The frequent use of the Feedback Principle is indicative of the fact that many business systems are still at a stage in their overall evolution where there are many aspects where there is either no or insufficient feedback between the different elements. Perhaps we might see the perennial 'communication' problem as a symptom of systems where Feedback is not sufficient, or the fact that the idea of obtaining good feedback from customers is still a relatively new idea for many companies. A good example of Principle 23 being used in this context is the Boeing 777 'working together team' concept – where representatives from the airlines became part of the design team for the aircraft.

Principle 37 is linked to Principle 23 in the management context (we often see the two used in combination in fact) particularly in problems where an organization is trying to obtain feedback but there is insufficient data. In these situations, using the relative changes between data collected (say) at different times is a resource that companies are increasingly beginning to utilize during the resolution of contradictions.

Biggest Fallers

By definition, the number of Principles rising up the frequency of occurrence list must be matched by an equivalent number of Principles dropping down the list. Examination of Figure 1 reveals the top nine biggest fallers to be Inventive Principles:-

18, 34, 32, 16, 36, 14, 19, 39, 28

Several of these Principles – 18, 32, 14 and 28 – are placed lower in the sequence simply because they are more connected to technical systems than business systems. It is very easy to visualize curving (Principle 14) or colouring (32) or vibrating (18) a physical object, but much more difficult to draw analogies to curving things in a people or business context. This is not to say that these Principles are not being used in the business context, merely that because the connections tend to be more abstract, they applications are not so easy to find.

Perhaps the most surprising faller is Principle 19, Periodic Action, which is at 17th place in the management list compared to 7th place in the original Matrix. It is difficult to speculate on the reasons for the change, but perhaps the fact that business has to accommodate so many different periods (hours in a day, days in a week, seasonal shifts, holidays, etc) means that shifting from continuous to periodic is a resource that more business systems have already used when compared to technical systems.

Conclusions

The frequency with which Inventive Principles occur in the new business conflict Matrix compared to the original matrix is both similar and different. The main similarity is that 5 of the top 8 most commonly used Principles – 35, 2, 10, 1 and 15 are the same in both matrices. On the other hand, as shown in Figure 1, there have also been some significant shifts.

The main value of having a prioritized list of Inventive Principles is for those people that don't wish to worry about the details of defining contradictions, but simply want to start using the Principles to help generate ideas. To those people, the new Matrix offers a revised list of Principles 'most likely' to help them generate inventive solutions. This article represents the first place in which such a list has been published.

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