Darrell Mann "Hands on Systematic Innovation"

Errata and Q&A (Part 2)

Toru Nakagawa and the Translation Team in Japan, on Oct. 5, 2003

Reply by Darrell Mann, on Nov. 15, 2003

This is a document of errata, questions, and suggestions from the translation team in Japan to the Author and hopefully include the correspondences from the Author. Following are the notes for reading this documents:

- (1) The tables are arranged chapter by chapter and in the increasing order of the place of relevance.
- (2) The errata previously sent to us by the Author on June 20, 2003 are also included here for the sake of consistency and readers' convenience. They are marked at the Answer column as 'Mann June, 2003'... When it says 'Mann June, 2003 (Brazil)', reflects the correspondences between the Author and the Translator into Portuguese, Mr. Archimedes in Brazil.
- (3) The first column shows: Page, Type, paragraph, and line
  - Page: all refers to the page number in the published version, as was printed on May 2002.
  - Type: E: Error.; obvious error; including the errata shown in June 2003.
    - $Q{:}\ Question.\ Including error but being not clear how to change.$ 
      - Question concerning to the content.
    - C: Comment.
    - S: Suggestion. Some proposal for improvement.
      - Some of them will be adopted in the Japanese version without intending to the modification of the English version.
  - Paragraph: Headings and figures are not counted as a paragraph.
    - E.g., 3p represents the 3rd paragraph from the top, while
      - 3pb represents the 3rd paragraph from the bottom of the page.
    - Fig. or Table represents the figure or table in the page.
  - Line: Line number in the paragraph, usually counted from the top,
    - whereas line number counted from the bottom is shown as, say, 3b.
      - h: represents the heading which leads the paragraph.
- (4) The second column ('Is') shows the text at present.
  - The text is shown in black, while some part is shown in blue for your focus. Some explanation is shown in [1] in green.
- (5) The third column ('Has to be') shows the (proposed) corrected text and various comments. The text itself is shown in black, while the corrected part is shown in blue. Various comments and explanations are shown in [ ] in green.

Our Japanese translation version is trying to be as correct as possible to the original texts. Some points of changes will be made without listing up in this document explicitly as follows:: (6) In the Japanese version, all the headings will be numbered in a hierarchical way.

- This numbering is not shown in this document. They will appear in the enhanced table of contents some time later.
- (7) For emphasizing words and phrases, various ways are used in the original text (sometimes not in a consistent way). In the Japanese version we will try to reflect most of them but not all because the styles of expressing emphases are often different.
- (8) Layout of some parts (especially, some itemized parts) will be changed slightly.
- (9) Some words or phrases are inserted for brief additional explanation in [ ].

Page	Is	Has to be	Answer
Туре		(Question/Comment)	
Parag.			
Line			
233, QS	simple and yet, for many,	simple and yet, for many,	okay
2p; 1	non-instinctive.	non-intuitive.	
234, S	The next thing, then that we	The next thing, then, that we	okay
1p, 1	need to examine	need to examine [Insert a	
		comma.]	
235, E	it may be that all three will	it may be that all four will have	[Mann June 2003]
1p, 2-1b	have		
235, QS	will have to be evaluated	will have to be examined	okay
1p, 1b			
235, QS	Having defined what the	Having defined what the	[Mann June 2003]
4p, 1-2	function the system under	function the system under	
	evaluation is required to	evaluation is required to achieve	
	achieve is and have drawn	is, and having drawn the s-field	
	the s-field model	model	
		Having defined what function	[Nakagawa's suggestion]
		the system under consideration	okay
		requires to achieve, and having	
		drawn the s-field model	
235, QS	If the answer to this first	If the answer to this second	first is correct
1pb; 1b	question has been yes,	question has been yes,	
236, S	the s-field model might also	the s-field model might include	okay
3p; 1	include insufficient or	not only harmful but also	
	excessive relationships.	insufficient or excessive	
		relationships.	
236, QS	(note however, that	(note, however, that	okay
3p; 3		[Insert a comma.]	
236, QS	– e.g. via the	– e.g. via the recommendations	okay
3p, 4	recommendations contained	contained in Chapter 9, – then	
	in Chapter 9, then	[Insert a dash.]	
236, S	Table 12.1: Types of Field	Table 12.1: Types of Field	Convention is to place title
Table, h	[Title is placed at the bottom	[Title is placed at the top of the	under table
	of the table.]	table.]	
237, CS	[Various Field categories are	[The following footnote is	okay
Table	written with nowns or	inserted at the bottom of the	onuy
	adjectives, seemingly	table.]	
	without any rule.]	'Fields' not only have various	
		types as shown in this table, but	
		also appear in various ways.	
		For example, the gravitational	
		'Field' appear as gravitational	
		torce, gravitational acceleration,	
		field of gravity, gravitational	
		potential energy, etc. and causes	
		a variety of physical effects.	
		The concept of 'Field' contain all	

		these range of types and	
		appearances. In this context,	
		all the items in the table above	
		are expressed in adjective forms	
		[in Japanese edition].	
237, QS	Sotsialisticheskaya	Sotsialisticheskaya industriya	okay
2pb; 3	industriya, and found in	and found in Reference 17.3,	
	Reference 17.3 involving	involving	
		Shift the position of the	
		comma.]	
238, QS	the instinctive answer is	the intuitive answer is	okay
4p; 1			1
238, QS	to the chapter on resources	to the chapter on resources	okay
4p; 6b		(Chapter 14)	
238, Q	in industrial sized plants	[Does this mean 'in industrial	yes
1pb; 1-2		scale plants'?]	1
239, E	[In the third box-]	A good way of achieving	okay
Fig	A good way of doing		
000 E	achieving		Concepto 1 in Order inting
239, E	we have alreadyy seen this	we have already seen this	Corrected in 2 <sup>nd</sup> printing
1p, 1	problem	problem	
239, E	the first thing we need to do	the first thing we need to do	[Mann June 2003]
2p, 1-2	the function	function	
	the function	the first thing we need to de	Both are acceptable forms of
		with this problem is to define	Finalish
		the function	English
242 05	we should look to the	we should look first to the	okay
2+2, 00 2n: 3-4	standards relating to first	standards relating to	onay
20,04	modification of substances	modification of substances	
243. E	Any such system, if it is to	Any such system, if it is to	okay
1p; 1	deliver the function must	deliver the function, must	- Shuy
I.		[Insert a comma.]	
244, E	which of the three main	which of the four main	[Mann June 2003]
2p; 1-2	categories	categories	
244, QS	high amount of change to	high degree of change to the	Okay
2p; 4	the existing system	existing system	
245, S	requires a field (e.g.	requires a field (e.g. magnetic	Okay
1p; 5b	ferrofluid)	field with ferrofluid)	
246, Q	Shadow-graph inspection	[Does this mean:	No; shadowgraph is an
2p; 3	method	X-ray photograph inspection	inspection method in which
		method for health, etc?]	an object is placed in front of
			a light-source and the
			resulting shadow is
			inspected.
250, S	Material composition can be	Material composition can be	Nice, okay
3p; 3-5	more precisely identified by	more precisely identified by	
	measuring the spectrum of	measuring the spectrum of the	
	the resonant frequency of	resonant frequency of nuclei	
	electrons in response to	(e.g. hydrogen nuclei) placed in a	
	changing frequencies of a	magnetic field in response to	
	magnetic field.	changing frequencies of radio	
		wave, etc. (i.e. NMR)	

250. E	removal of clogged or	removal of clogged or blocked	Corrected in 2 <sup>nd</sup> printing
3pb; 3b	blacked contents	contents	principal princi
251 QS	protected from frost damage	protected from damage caused	protected from damage
$\frac{1}{1}$ nh: 2	caused by ground stress	by frozen ground stress	caused by frost-generated
100, 2	caused by ground stress	by hozen ground stress	ground stress
252 QS	Include a foam matrix	Include a foam matrix within a	The foam does not 'prevent' -
$4nh^{\circ} 2h$	within a tank of rocket fuel	tank of rocket fuel acts to	it provents the spread pot
4pb, 2b	acta to abcorb curlesions	nevent evplosions	the emplosion itself heree
	acts to absorb explosions	prevent explosions	'absorb'
252 05	Bio-grado triggor motorials	<b>Biordogno do triggor motorial</b> a	aborb
202, Q0	Dio grade trigger materials	Dio degrade trigger materials	OKAY
253 O	athornized difficult to lodge	What is the meaning of the	Use 'remove' as in 'difficult
$\frac{1}{200}, \mathbf{q}$	egg	word 'lodge'?]	to remove'
253 E	Baromotor records drop	[Print in the normal way]	Corrected in 2 <sup>nd</sup> print
200, E	Printed in smaller fonts and	[i fint in the normal way.]	Corrected in 2 <sup>nd</sup> print
2p, 3	with more indeptation ]		
253 E	hosts home without	hosts home without (apparent!)	[Mann June 2003]
200, E	(apparent!) and aliminates	advorse affects and eliminates	[Main Julie 2003]
2p, 20 253 S	(apparent:) and eminiates	auverse affects and eminiates	Okay
200, 0 1nh: 3	control of	control of	OKay
100, 0		[Ronlaco a comma with a	
		comi-colon ]	
254 0	Digosting bactoria romovo	[Doos this talk about the	Both but I was primarily
204, Q 3n: 2h	harmful chamicals/wasta	situation inside human/animal	thinking about waste
5p, 20	products/ote	hody or in wests processing	processing facilities
	products/etc	facilities? or both?]	processing facilities
254 0	bills potentially houseful	[What is the meaning of the	Pielegical tarm for large
204, Q	kills potentially harmiul	[what is the meaning of the	blological term for larvae
3p, 10	Combine high and low	[How about using the word	phase of a sman bug
$200, \mathbf{Q}$ 1nh <sup>•</sup> 9h	company and low	Inow about using the word	okay
100, 20	emissivity surfaces	of lomissivity 2	
957 F	and on to completely flowible	and on to completely flowible	[Mann June 2002]
207, E 1ph <sup>•</sup> 1h	structures	structures)	[Main Suie 2005]
258 OS	Make use of 'transformable'	Make use of 'transformable'	okay
200, 00	alements of substances	properties of substances	onay
258 QS	Leser shock peeping	Leser shot peeping bardens	okay
200, 00 3n: 4h	hardens material surface	material surface	onay
260 S	and the environment of the	and the lighting rod is neutral	okay
200, D 1nh:	device being protected is	for the device being protected	onay
4-3h	neutral	for the device being protected.	
261. E	Uses mirrors to multiple	Use mirrors to multiply light in	[Mann June 2003]
3pb; 1b	light in a room	a room	corrected in $2^{nd}$ print
261. QS	combustion products into	combustion products into and	okav
2pb;	and out of cylinder of IC	out of cylinder of internal	
3-2b	engine	combustion engine	
262. QS	Polyorganosiloxane prevents	Q: What kind of 'surface' is this	Aerospace insect repellant
2ph; 5h	insect debris from sticking to	talking about?	surface chemistry – for
-po, oo	a surface	taning about.	wings windshields etc
263 E	environment (which may be	environment (which may be	[Mann June 2003]
3p; 2	temporary in either of the	temporary) in either of the	okay
5P	substances	substances	
263; E	(e.g. maximum in one place	(e.g. maximum in one place	[Mann June 2003]
1pb; 1	minimum in another), and	minimum in another) and	okay

		[Delete a comma.]	
264; QS	is required, and the field is	is required and the field is	okay
2p; 1	sometimes insufficient and	sometimes insufficient, add	
		[Move the position of a comma.]	
264; E	(Use thermochromic	(Use thermochromic ink	Keep it as a separate item
2p; 3-2b	ink different effects)	different effects)	preferably – possibly delete
	[This sentence is itemized.]	[Move this sentence as a note to	the parentheses
		the preceding item.]	
265; Q	Ditto other bio-sorbable	Ditto other bio-dissolvable	Bio-sorbable is the correct
2pb; 5b	materials	materials	word; not the same meaning
			as dissolvable – in
			bio-desorbable, the material
			is absorbed into the body
266; Q	Clockwork radio (uses	Clockwork clock (uses human	Clockwork radio is a good
1p; 3	human power)	power)	example in the UK as a very
		[Q: Is radio a good example?]	famous inventor has one on
			the market. Change if you
			need to, or call it 'clockwork
			systems (e.g. clock, radio,
			etc)
267; Q	Voice sensitive mobile phone	[Q: What does this mean?	Means the microphone
1p; 5	(addition of microphone and	Voice control?]	compensates automatically
	audio field)		for different noise levels.
			Also phones that use speech
			recognition to convey
			commands

Page	Is	Has to be	Answer
Туре		(Question/Comment)	
Parag.			
Line			
273, E	this apparently simple	this picture:	[Mann June 2003]
2pb; 1b	picture:-		'relatively simple' in 2 <sup>nd</sup>
			print
274, QS	and so on) so certain	and so on); so certain systems	okay
1p; 4	systems	[Insert a semicolon.]	
274, S	Having made the connection	Having made the connections	okay
1pb, 1	between handle=monolithic	that handle = monolithic and	
	and bristle=monolithic,	that bristle = monolithic,	
276, E	evolve in the ay the they do.	evolve in the way the they do.	[Mann June 2003]
1pb;			corrected in 2 <sup>nd</sup> print
4-3b			
277, QS	before we start to actually	before we start to actually use	Anger is the British
2p; 1b	use the trends in anger.	the trends in eager.	expression. Alternative
			would be 'earnest'
278, E	power generated (higher	power generated (higher number	[Mann June 2003]
2p; 3	number of blades has	of blades) has	corrected in 2 <sup>nd</sup> print
278, E	– progressively making	<ul> <li>progressively making better</li> </ul>	[Mann June 2003]
2pb; 3b	better and better use of	and better use of resources –	okay
	resources, they learn	they learn	
		[Replace a comma with a dash.]	

279, E	(whether it be our own of one	(whether it be our own or one	okay
3pb; 2	belonging to a competitor)	belonging to a competitor)	
282, QS	The space segmentation	On the space segmentation	okay
1p; 3-1b	spoke on the radar plot the	spoke on the radar plot, the	
	shaded area boundary for	shaded area boundary for the	
	the chosen invention	chosen invention consequently	
	however will be drawn	will be drawn	
282, QS	offer benefits over the	offer benefits over the current	okay
2p; 3-4	current hollow design?	solid design?	
282, Q	This trend defines	[The words 2D/3D surfaces seem	Into surfaces roughened in
1pb; 2-3	increasing benefits to be	not clear in their meanings.]	first 2-D 'ribes' and then
	gained by evolving smooth		3-dimensional protrusions
	surfaces into 2D and 3D		and depressions.
	surfaces.		
283, E	design – like the majority of	design – like the majority of	Corrected in 2 <sup>nd</sup> print
3p; 2	other mechanical designs	other mechanical designs – has	
	has	[Insert a dash.]	
283, E	untapped potential in the	untapped potential, and	[Mann June 2003]
1pb;	design, and therefore that	therefore that there are	corrected in 2 <sup>nd</sup> print
2-1b	there are consequently	significant improvements that	
	significant improvements	can be developed.	
	that we be developed.		
284, E	[In the figure caption:]	(NB: all plots have been shown	okay
Fig	(NB: all plots have been	with	
	show with		
284, E	within the bearing – but	within the bearing – do have	[Mann June 2003]
3pb; 3	does have	1 (1 ) 1 ) 1	corrected in 2 <sup>nd</sup> print
284, QS	when those individual balls	when those individual	Balls is better
3pb, 1b	begin to interact	components begin to interact	
285, E	This, of course is the	This, of course, is the difference	okay
2pb, 4b	difference	[Insert a comma.]	1
286, Q	In this section, if we put	In this section, when we put	okay
2p, 1	aside all the human issues	aside all the numan issues	
286, QS	such as computer	such as computer hard-disk	окау
2p, 40	The TDIZ (Demonstration)	The TDIZ Demonstration! (ass	Would be better on The
290, QS	(as final section of this	fine I KIZ Dynamization (see	TDIZ Demonstration trand
2p, 1	(see final section of this	trend in other words	(acc final costion of this
	words	[Insort a comma ]	(see final section of this chapter) in other words '
291 05	the performance conshilition	the performance canabilities of	Okay
1nh: 1-9	of the hydraulic systems	the hydraulic systems: after	Ghay
100, 12	after which point	which point	
		[Replace a comma with a	
		semi-colon.]	
293. QS	problem into a generic one	problem into a generic one	Prefer 'general' as is in the
2p; 2-3	locating the general solution	locating the generic solution and	current version – otherwise
1	and then translating the	then translating the generic	too many uses of 'generic' in
	general solution into a	solution into a specific solution	the sentence
	specific solution	· · · · · · · · ·	
293, QS	specific system under	specific system under	okay
3pb; 2	evaluation	consideration	
293, QS	the specific-generic	the specific-generic connection	Prefer 'transition' as is in the
3pb; 5-6	transition only has to be	only has to be done once.	current version. If you use

	done once.		connection then it should
			read 'connection only has to
			be made once'
294 E	the use of water-et cutters	the use of water-jet cutters	okay
201, L 2n: 2h		the use of water jet catters	ondy
205 E	another function as all as	another function as well as	Corrected in 2nd print
250, E	'onhoneo autting'	'onhance outting'	Corrected in 2 <sup>nd</sup> print
op, 20			Olares
295, 5	from the lawn example,	from the lawn mower example,	Окау
4p, 2b			1
295, S	Figure 13.25 indicates	Table 13.1 indicates	okay
1pb; 4		[The figure actually is a table.]	
296, CS	Figure 13.25: Example of	Table 13.1:    Example of M-B-P	Convention used elsewhere
Fig. title	M-B-P Combination	Combination Possibilities	is title at the bottom
	Possibilities	[The title is placed at the top of	
	[This title is place at the	the table.]	
	bottom of the figure.]		
297, CS	Figure 13.26 illustrates key	Figure 13.25 illustrates key	okay
2p; 1	stages	stages	
297, CS	Figure 13.26: Partial	Figure 13.25: Partial Evolution	okay
Fig.	Evolution History of the	History of the Bicycle	
0.	Bicycle		
297 CS	Table 13.1 below describes	Table 13.2 below describes	okay
201, 00 3n; 2-1h			ondy
207 OS	[Loft column corresponding	Conflict - more offert required to	okay
297, QO Tabla	te 1970'l	turn wheel:	окау
Table	Conflict - mana affant	[In cost a cost incolor]	
	Conflict - more effort	[Insert a semi-colon]	
007.00	required to turn wheel	1000	1
297, QS	[Right column.]	1888 - pneumatic tyre	okay
Table	1888 -pneumatic tyre	introduced; speed increasing	
	introduced; speed		
297, CS	Table 13.1: Evolution of the	Table 13.2: Evolution of the	Convention is bottom
Table, h	Bicycle	Bicycle	
	[Title is placed at the bottom	[Place this at the top of the	
	of the table.]	table.]	
298, Q	the ideality of the various	[Q: Some words are missing	This is the correct form of
2p; 4	constituent parts was often	after 'but'.]	English. No correction
	doing anything but.		required.
298, CS	think about cutlery (Figure	think about cutlery (Figure	okay
3p; 2	13.27).	13.26).	
298. CS	Figure 13.27: Influence of	Figure 13.26: Influence of Fork	okav
Fig. h	Fork Evolution on Knife	Evolution on Knife Evolution	
1 181 11	Evolution		
298 E	It also in keening with the	It also in keeping with the	Okay
1nh:	theme of Petroski's book	theme of Petroski's book	Ondy
1pb, 2-9h	illustrates	illustrates	
0 40	masmates	Insort a comme ]	
200 200	his halisf that the state 1	[insert a comma.]	
298, QS	his belief that the principle	his benefit that the principal	окау
1pb, 2b	uriver of evolution	uriver of evolution	
299, Q	The main point emerging	The main point emerging from	The main point emerging
1p; 1-5	trom the Law of	the Law of Non-Uniform	trom the Law of
	Non-Uniform Evolution is	Evolution is we need to	Non-Uniform evolution is
	that we need to	[Q: This sentence is difficult to	that we need to be very
		understand what the Author	careful when conducting a

Image: Section in June 2003 seems on thelpful. This sentence need to be divided into shorter ones.]This is particularly so when we are looking at a system from second hierarchical prespectives, and take into account the fact that an increase in ideality at one level may necessitate a decrease in ideality at an increase			want to say. The Author's	trend analysis of a system.
and helpful. This sentence and not helpful. This sentence and to be divided into shorter ones.]we are boking at a system from several hierarchical perspectives, and take into account the fact that an increase in ideality at a lower level. The overall direction of evolution is driven by the increasing ideality to a lower level. The overall direction of evolution is driven by the increasing idealitywe are boking at a system from several hierarchical perspectives, and take into account the fact that an increased ideality eventually triumphs.developing ideality at a lower level. The overall direction of evolution is driven by the increasing idealitywe are boking at a system from several hierarchical perspectives, and take into account the fact that a an increased ideality eventually triumphs.299, F 299, F 299, 5generated still being one which is generated still being one which is generated across the top of the page.Mann June 2003l corrected in 24 print300, CS 300, CS 19, 23figure 13,28 shows top of the page.Figure 13,27 showsokay301, CS 301, CS 301, CSFigure 13,28 : Clustering of trends, interpretable in a total of 35 ways.Figure 13,27 : Clustering of trends, interpretable in a total of 35 ways.Figure 13,28 : Clustering of trends, interpretable in a total of 35 ways.301, CE 303, QS 51, 24Figure 13,28 : Clustering of trends, interpretable in a total of 35 ways.Figure 13,28 : Clustering of trends, interpretable in a total of 35 ways.Near trends, interpretable in a total of 35 ways.303, QS 51, 24Fife and and and and another matchild, fibr			correction in June 2003 seems	This is particularly so when
Interpret			not helpful. This sontones need	we are looking at a system
100100Reversion Reversion Reversio Reversion Reversi			to be d'aided iste abertan and	for a system
Image: speech of the section of the			to be divided into shorter ones.]	from several hierarchical
299. B 3p: 3-2bthat eventually the allure of increased ideality at one level may necessitate a decrease in ideality at one level may necessitate a decrease in ideality at one level may necessitate a decrease in ideality at one level The overall direction of evolution is direction of evolution is increased ideality oventually triumphs.that eventually the allure of increased ideality triumphs.secount the fact that an increasing ideality299. B 3p: 3-2bthat eventually the allure of increased ideality oventually triumphs.that eventually the allure of increased ideality triumphs.okay209. S 3p: 3generated still one which is being presented across the to of the page.generated still being one which presented across the top of the page.okay300. QS 1pb: 2-3Figure 13.28 showsFigure 13.27 showsokay301. QE 3p: 3Figure 13.28: Clustering of Technology Evolution trends.Figure 13.27: Clustering of Technology Evolution TrendsOkay301. QE 3p: 3- there are 30 different trends, interpretable in a total of 35 ways there are of the 31 individual total of 35 ways.okay303. QS 307. Q 307. QIt features major shifts from states.[Q: You use two words fluid and to achieve consistencyokay303. QS 303. QSmano-tube material, fibre inserts, micro motors, total of 35 ways.'make measurements simple is correctMake simple measurements is correct303. QS 303. QS- achor the 31 individual trends.for each of the 31 individual to achieve consistencyokay30				perspectives, and take into
Image: set of the				account the fact that an
Level may necessitie a decrease in ideality at a lower level. The overall direction of evolution is diriven by the increasing idealitylevel may necessitie a decrease in ideality at a lower level. The overall direction of evolution is diriven by the increasing ideality299, Bthat eventually the allure of increased ideality triumphs.that eventually the allure of increased ideality triumphs.okay299, Fgenerated still one which is increased ideality triumphs.generated still being one which is increased ideality triumphs.okay300, Sinvolves the basic trend being presented across the top of the page.involves the basic sequence of stages of the trend being presented across the top of the page.okay300, QSFigure 13.28 showsFigure 13.27 showsokay300, QSthe system being evaluated involvesthe system being examined involvesokay301, CSFigure 13.28: Clustering of Technology Evolution Trendsokay301, QETechnology Evolution Trendsinterpretable in a total of 35301, QErends. interpretable in a total of 35ways.303, QS'make simple'make measurements simple303, QSindex simple'make measurements simple304, QEIt features may on shifts from space.'make measurements is overet's in server.307, QIt features may on shifts from space.[Q: You use two words 'fluid and the achieve consistency' over gloves - 'poke yoke' assembly forms, inserts, micro-motos, inserts, micro-motos				increase in ideality at one
LendImage: set of the set of t				level may necessitate a
Image: space s				decrease in ideality at a
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2p; 2 trends, interpretable in a total of 35 ways.interpretable in a total of 35 ways.interpretable in a total of 35 ways.301, QE 2p; 3for each of the 30 individual trends.for each of the 31 individual trends.okay2p; 3trends.for each of the 31 individual trends.okay303, QS 303, QS- make simple measurements:- make measurements simple is correctMake simple measurements307, Q 2pb; 1-2It features major shifts from solid to liquid to gas to field states.[Q: You use two words 'fluid' and 'liquid' in this trend. How do you distinguish them and why do you use them both? - It is worthy of adding a footnote.]Change all 'liquid' into 'fluid' to achieve consistency308, QS Ex; 1-2nano-tube material fibre inserts, micro-motors, yoke assembly forms,nano-tube material, fibre inserts, micro-motors, (Insert a comma.]No comma - text is correct as is311, QS ttil- clothing, hand-grips, yoke assembly forms,- clothing, hand-grips, scissors, oven gloves -, 'poke yoke' assembly forms,Okay313, Q ttileGeometric Evolution (Linear)[Q: The word 'linear' in this what does it mean in contrast to the 'volumetric' ?]Context is lines rather than solid models315, S[The trend sequences are:]Immobile System>Okay (graphic doesn't fit if	301, QE	– there are 30 different	– there are 31 different trends,	okay
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2p; 3trends.trends.trends.303, QS·make simple measurements· Box2R·make measurements simple measurements· Box2RMake simple measurements is correct307, QIt features major shifts from solid to liquid to gas to field states.[Q: You use two words 'fluid' and vou distinguish them and why do you use them both? · It is worthy of adding a footnote.]Change all 'liquid' into 'fluid' to achieve consistency308, QSnano-tube material fibre inserts, micro-motors, workenano-tube material, fibre inserts, micro-motors, (Insert a comma.]No comma - text is correct as is311, QS- clothing, hand-grips, voke assembly forms,- clothing, hand-grips, scissors, oven gloves -, 'poke yoke' assembly forms,okay313, QGeometric Evolution (Linear)[Q: The word 'linear' in this context is difficult to explain. What does it mean in contrast to the 'volumetric' ?]Context is lines rather than solid models315, S[The trend sequences are:]Immobile System>Okay (graphic doesn't fit if	301, QE	for each of the 30 individual	for each of the 31 individual	okay
303, QS Table; Box2R• make simple measurements*• make measurements simpleMake simple measurements is correct307, Q 2pb; 1*2It features major shifts from solid to liquid to gas to field states.[Q: You use two words 'fluid' and 'liquid' in this trend. How do you distinguish them and why do you use them both? • It is worthy of adding a footnote.]Change all 'liquid' into 'fluid' to achieve consistency308, QS Ex; 1*2nano*tube material fibre inserts, micro*motors, you assembly forms,nano*tube material, fibre inserts, micro*motors, (Insert a comma.]No comma - text is correct as is311, QS title- clothing, hand-grips, yoke assembly forms,- clothing, hand-grips, scissors, oven gloves -, 'poke yoke' assembly forms,okay313, Q titleGeometric Evolution (Linear)[Q: The word 'linear' in this context is difficult to explain. What does it mean in contrast to the 'volumetric' ?]Context is lines rather than solid models315, S[The trend sequences are:]Immobile System>Okay (graphic doesn't fit if	2p; 3	trends.	trends.	
Table: Box2Rmeasurements- measurements-is correct307, Q 2pb; 1-2It features major shifts from solid to liquid to gas to field states.[Q: You use two words 'fluid' and 'liquid' in this trend. How do you distinguish them and why do you use them both? - It is worthy of adding a footnote.]Change all 'liquid' into 'fluid' to achieve consistency308, QS 1.2nano-tube material fibre inserts, micro-motors, worthy of adding a footnote.]No comma - text is correct as is308, QS 1.1nano-tube material, fibre inserts, micro-motors, worthy of adding a footnote.]No comma - text is correct as is301, QS 1.1- clothing, hand·grips, scissors, oven gloves, poke yoke assembly forms,- clothing, hand·grips, scissors, oven gloves -, 'poke yoke' assembly forms,okay313, Q titleGeometric Evolution (Linear)[Q: The word 'linear' in this context is difficult to explain. What does it mean in contrast to the 'volumetric' ?]Context is lines rather than solid models315, S[The trend sequences are:]Immobile System>Okay (graphic doesn't fit if	303. QS	- make simple	- make measurements simple	Make simple measurements
Box2RInterviewInterview307, QIt features major shifts from solid to liquid to gas to field states.[Q: You use two words 'fluid' and 'liquid' in this trend. How do you distinguish them and why do you use them both? - It is worthy of adding a footnote.]Change all 'liquid' into 'fluid' to achieve consistency308, QSnano-tube material fibre inserts, micro-motors, worthy of adding a footnote.]No comma – text is correct as is308, QSnano-tube material fibre inserts, micro-motors, worthy of adding a footnote.]No comma – text is correct as is311, QS- clothing, hand-grips, yoke assembly forms,- clothing, hand-grips, scissors, oven gloves -, 'poke yoke' assembly forms,okay313, QGeometric Evolution (Linear)[Q: The word 'linear' in this context is difficult to explain. What does it mean in contrast to the 'volumetric' ?]Context is lines rather than solid models315, S[The trend sequences are:]Immobile System>Okay (graphic doesn't fit if	Table:	measurements-	1	is correct
307, Q 2pb; 1·2It features major shifts from solid to liquid to gas to field states.[Q: You use two words 'fluid' and 'liquid' in this trend. How do you distinguish them and why do you use them both? · It is worthy of adding a footnote.]Change all 'liquid' into 'fluid' to achieve consistency308, QS Ex; 1·2nano-tube material fibre inserts, micro-motors, zotsors, oven gloves, poke yoke assembly forms,nano-tube material, fibre insert a comma.]No comma – text is correct as is311, QS Ex; 1·2- clothing, hand-grips, yoke assembly forms,- clothing, hand-grips, scissors, oven gloves -, 'poke yoke' assembly forms,okay313, Q titleGeometric Evolution (Linear)[Q: The word 'linear' in this context is difficult to explain. What does it mean in contrast to the 'volumetric' ?]Context is lines rather than solid models315, S[The trend sequences are:]Immobile System>Okay (graphic doesn't fit if	Box2R			
307, QInfectures major sinus from solid to liquid to gas to field states.'liquid use two words fund and biguid in this trend. How do you distinguish them and why do you use them both? - It is worthy of adding a footnote.]Ontange an inquid into fund to achieve consistency308, QS Ex; 1-2nano-tube material fibre inserts, micro-motors, micro-motors,nano-tube material, fibre inserts, micro-motors, [Insert a comma.]]No comma – text is correct as is311, QS Ex; 1-2- clothing, hand-grips, scissors, oven gloves, poke yoke assembly forms,- clothing, hand-grips, scissors, oven gloves –, 'poke yoke' assembly forms,okay313, Q titleGeometric Evolution (Linear)[Q: The word 'linear' in this context is difficult to explain. What does it mean in contrast to the 'volumetric' ?]Context is lines rather than solid models315, S[The trend sequences are:]Immobile System>Okay (graphic doesn't fit if	307 0	It features major shifts from	[Q: You use two words 'fluid' and	Change all 'liquid' into 'fluid'
2 bb. 1 2solid to inquit to gas to heldinquit in this trend. from doto athreve consistencystates.you distinguish them and why do you use them both? - It is worthy of adding a footnote.]No comma - text is correct308, QSnano-tube material fibre inserts, micro-motors, Ex; 1-2nano-tube material, fibre inserts, micro-motors, [Insert a comma.]No comma - text is correct as is311, QS- clothing, hand-grips, scissors, oven gloves, poke yoke assembly forms,- clothing, hand-grips, scissors, oven gloves -, 'poke yoke' assembly forms,okay313, QGeometric Evolution (Linear)[Q: The word 'linear' in this context is difficult to explain. What does it mean in contrast to the 'volumetric' ?]Context is lines rather than solid models315, S[The trend sequences are:]Immobile System>Okay (graphic doesn't fit if	$2nh^{1}$	solid to liquid to gas to field	'liquid' in this trend How do	to achieve consistency
states.you distinguish them and why do you use them both? - It is worthy of adding a footnote.]No comma - text is correct as is308, QSnano-tube material fibre inserts, micro-motors, Inserts, micro-motors, Ex; 1-2nano-tube material, fibre inserts, micro-motors, Insert a comma.]No comma - text is correct as is311, QS- clothing, hand-grips, scissors, oven gloves, poke yoke assembly forms,- clothing, hand-grips, scissors, oven gloves -, 'poke yoke' assembly forms,okay313, QGeometric Evolution (Linear)[Q: The word 'linear' in this context is difficult to explain. What does it mean in contrast to the 'volumetric' ?]Context is lines rather than solid models315, S[The trend sequences are:]Immobile System>Okay (graphic doesn't fit if	2p0, 1 2	sona to nquia to gas to neia	inquite in this trend. How do	to achieve consistency
do you use them both? - It is worthy of adding a footnote.]No comma - text is correct as is308, QSnano-tube material fibre inserts, micro-motors, inserts, micro-motors, [Insert a comma.]No comma - text is correct as is311, QS- clothing, hand-grips, scissors, oven gloves, poke yoke assembly forms,- clothing, hand-grips, scissors, oven gloves -, 'poke yoke' assembly forms,okay313, QGeometric Evolution (Linear)[Q: The word 'linear' in this context is difficult to explain. What does it mean in contrast to the 'volumetric' ?]Context is lines rather than solid models315, S[The trend sequences are:]Immobile System>Okay (graphic doesn't fit if		states.	you distinguish them and why	
308, QSnano-tube material fibrenano-tube material, fibreNo comma – text is correctEx; 1-2inserts, micro-motors,inserts, micro-motors,as is311, QS– clothing, hand-grips,– clothing, hand-grips, scissors,okayEx; 1-2scissors, oven gloves, pokeoven gloves –, 'poke yoke'oven gloves –, 'poke yoke'313, QGeometric Evolution[Q: The word 'linear' in this context is difficult to explain. What does it mean in contrast to the 'volumetric' ?]Context is lines rather than solid models315, S[The trend sequences are:]Immobile System>Okay (graphic doesn't fit if			uo you use them both? - It is	
308, QSnano-tube material fibrenano-tube material, fibreNo comma – text is correctEx; 1-2inserts, micro-motors,inserts, micro-motors,as is311, QS– clothing, hand-grips, scissors, oven gloves, poke yoke assembly forms,– clothing, hand-grips, scissors, oven gloves –, 'poke yoke' assembly forms,okay313, QGeometric Evolution (Linear)[Q: The word 'linear' in this context is difficult to explain. What does it mean in contrast to the 'volumetric' ?]Context is lines rather than solid models315, S[The trend sequences are:]Immobile System>Okay (graphic doesn't fit if			worthy of adding a footnote.]	
Ex; 1-2inserts, micro-motors, [Insert a comma.]as is311, QS- clothing, hand-grips, scissors, oven gloves, poke yoke assembly forms,- clothing, hand-grips, scissors, oven gloves -, 'poke yoke' assembly forms,okay313, QGeometric Evolution (Linear)[Q: The word 'linear' in this context is difficult to explain. What does it mean in contrast to the 'volumetric' ?]Context is lines rather than solid models315, S[The trend sequences are:]Immobile System>Okay (graphic doesn't fit if	308, QS	nano-tube material fibre	nano-tube material, fibre	No comma – text is correct
Image: Second	Ex; 1-2	inserts, micro-motors,	inserts, micro-motors,	as is
311, QS Ex; 1·2- clothing, hand-grips, scissors, oven gloves, poke yoke assembly forms,- clothing, hand-grips, scissors, oven gloves -, 'poke yoke' assembly forms,okay313, Q titleGeometric Evolution (Linear)[Q: The word 'linear' in this context is difficult to explain. What does it mean in contrast to the 'volumetric' ?]Context is lines rather than solid models315, S[The trend sequences are:]Immobile System>Okay (graphic doesn't fit if			[Insert a comma.]	
Ex; 1-2scissors, oven gloves, poke yoke assembly forms,oven gloves -, 'poke yoke' assembly forms,oven gloves -, 'poke yoke' assembly forms,313, QGeometric Evolution (Linear)[Q: The word 'linear' in this context is difficult to explain. What does it mean in contrast to the 'volumetric' ?]Context is lines rather than solid models315, S[The trend sequences are:]Immobile System>Okay (graphic doesn't fit if	311, QS	– clothing, hand-grips,	- clothing, hand-grips, scissors,	okay
yoke assembly forms,assembly forms,assembly forms,313, Q titleGeometric Evolution (Linear)[Q: The word 'linear' in this context is difficult to explain. What does it mean in contrast to the 'volumetric' ?]Context is lines rather than solid models315, S[The trend sequences are:]Immobile System>Okay (graphic doesn't fit if	Ex; 1-2	scissors, oven gloves, poke	oven gloves –, 'poke yoke'	
313, Q       Geometric Evolution       [Q: The word 'linear' in this context is difficult to explain.       Context is lines rather than solid models         title       (Linear)       What does it mean in contrast to the 'volumetric' ?]       Solid models         315, S       [The trend sequences are:]       Immobile System>       Okay (graphic doesn't fit if		yoke assembly forms,	assembly forms,	
title       (Linear)       context is difficult to explain. What does it mean in contrast to the 'volumetric' ?]       solid models         315, S       [The trend sequences are:]       Immobile System>       Okay (graphic doesn't fit if	313, Q	Geometric Evolution	[Q: The word 'linear' in this	Context is lines rather than
Big Mat does it mean in contrast to the 'volumetric' ?]       What does it mean in contrast to the 'volumetric' ?]         315, S       [The trend sequences are:]       Immobile System>       Okay (graphic doesn't fit if	title	(Linear)	context is difficult to explain.	solid models
the 'volumetric' ?]     the 'volumetric' ?]       315, S     [The trend sequences are:]     Immobile System>     Okay (graphic doesn't fit if			What does it mean in contrast to	
315, S [The trend sequences are:] Immobile System> Okay (graphic doesn't fit if			the 'volumetric' ?]	
	315, S	[The trend sequences are:]	Immobile System>	Okay (graphic doesn't fit if

Fig	Immobile System>	Jointed System>	the extra box is added –
	Jointed System>	Multiple Jointed System>	hence the least important
	Fully Flexible System	Fully Flexible System	one was deleted)
315, Q	medical stent,	[Q: What is the meaning of	This is the correct medical
Ex., 2		'stent'? What is medical stent?]	term for a device that
			unblocks arteries in an
			angioplasty operation
317, E	many examples of this trend	many examples of this trend	[Mann June 2003]
Notes;	in action.	having taken place.	correct in 2 <sup>nd</sup> print
1b			
319, E	[In 2nd row right column:]	All the same	[Mann June 2003]
Table	Any stage to the Next		correct in 2 <sup>nd</sup> print
319, QS	that a point is reached,	that there exists a point, beyond	okay
Notes; 1	beyond which it is no longer	which it is no longer possible to	
	possible to		
319, Q	Applies to both time and	[Q: How this trend is related to	Time = periods or multiple
Notes;	interface issues.	the time issue? I feel it more	similar activities,
1b		related to space.]	Interfaces – teeth on a comb
			are necessary because of
			interface with hair
321, QS	(negative components = (e.g.	(negative components =	okay
Ex.; 1-2	nail-puller on hammer),	nail-puller on hammer),	
321, S	The timing of these jumps to	The timing of these jumps to	okay
Notes;	negative is difficult	'negative' is difficult	
2-1b			
321, S	negative thing, if it doesn't	negative thing, if it doesn't	okay
Notes;	already exist is unknown	already exist, is unknown	
1b		[Insert a comma.]	
323, E	[In 2nd row right column:]	All the same	[Mann June 2003]
Table	Any stage to the Next		correct in 2 <sup>nd</sup> print
323, E	relates only to the number of	relates only to the number of	okay
Notes; 2	trends incorporated	senses incorporated	
325, E	by S. Dewulf and reported in	by S. Dewulf and reported in	okay
Notes;1-	TRIZ Journal, June 2002.	Imperial College PhD thesis.	
2			
325, QS	is a long sought after goal.	is a long sought-after goal.	okay
Notes;		[Insert a hyphen.]	
1b			
327, QS	– and the idea that things	– and the idea that over time	okay
Notes; 5	over time		
329, S	[The third axis is drawn in a	[The axis should be drawn	okay
Fig	thin dotted line.]	thicker.]	
330, E	[In 2nd row right column:]	All the same	[Mann June 2003]
Table	Complex to Elimination of		correct in 2 <sup>nd</sup> print
	components		
332, E	[In 2nd row right column:]	All the same	[Mann June 2003]
Table	Any stage to the Next		correct in 2 <sup>nd</sup> print
333, E	in terms of 'if anything can	in terms of 'if anything can go	[Mann June 2003]
Ex.; 2-3	go wrong, it will go wrong	wrong, it will go wrong' design	okay
	design philosophy	philosophy	
		[Insert a comma.]	
333, E	axle of a car, for example, at	axle of a car, for example, at one	okay
Notes;	one time as thought to be	time was thought to be	

11			
333, E	of one ill not impact on	of one will not impact on	[Mann June 2003]
Notes;			correct in 2 <sup>nd</sup> print
7b			
334, E	[In 2nd row right column:]	All the same	[Mann June 2003]
Table	Any stage to the Next		correct in 2 <sup>nd</sup> print
334, S	increasing moves towards of	increasing moves towards use of	correct in 2 <sup>nd</sup> print
Notes; 2	wind,	wind,	

Page	Is	Has to be	Answer
Туре		(Question/Comment)	
Parag.			
Line			
335, E	as a towel horse?	as a towel horse?"	okay
0p; 1		[Insert a double quote.]	
336, QS	the system you are	the system you are considering.	okay
1p; 2	evaluating.		
kay336,	Transforming/Modifying	Special Properties/Modifications	okay
S	Substances	of Resources	
3p; 4		[So as to match with the subtitle	
		below.]	
336, S	Manufacturing Resources	[Delete this line and insert the	okay
3p; 5		following between lines 2 and 3:]	
		Manufacture Process Type	
		Resources	
336, S	Resources in the	[Reduce the font size by one	okay
5p; h	Environment	rank.]	
	[This heading is printed		
	with larger fonts.]		
336, S	Velocity	Velocity (m/s)	okay
1pb; 3b			
338, Q	[In the bottom row, right	[Q: What do you want to say	Either oxygen or nitrogen
Table	column; line 3:]	about oxygen and nitrogen?]	can be used in al alkylation
	Alkylation – oxygen,		process – no change required
	nitrogen		
338, Q	[In the bottom row, right	Lithiation (BuLi, LAD)	You are correct, change
Table	column; line 4b:]	[Does this mean Lithium	accordingly
	Lithiation (BuLi, LDA)	Aluminium Deuteride?]	
339, Q	[Top table, right column, line	[Q: What is phosgenation?]	Chemical process used in
Table	2:]		agro-chemical sector – no
	Phosphorylation,		change required
	Phosgenation		
340, E	[Bottom table, 2nd row, right	(Reference 14.6)	correct in 2 <sup>nd</sup> print
Table	column:]		
	(Reference 14.5)		
342, E	Chapter 17, it can be become	Chapter 17, it can become a	Okay
6p; 3	a useful resource	useful resource	

PageIsHas to beAnswer	

Туре		(Question/Comment)	
Parag. Line			
346, QS Table	[The table in starting in page 346 does not have a title.]	Table 15.1 [Please specify the title of this table.]	The 'Table' continues for several pages and so we decided that a label is confusing. If you wish to add a title, it will be 'Function Database'. The English edition will not have a title for this table.
346, QS Table	[Detailed items in this table are sometimes separated with commas but often not, and in some cases one item is shown in two lines without any explicit marks.]	[Please use itemization marks explicitly, or else use commas consistently all the time.] [There could be many cases where reader's understanding might not be correct.]	Commas should be removed.
351, QS Table	[The table in starting in page 351 does not have a title.]	Table 15.2 [Please specify the title of this table.]	The 'Table' continues for several pages and so we decided that a label is confusing. If you wish to add a title, it will be 'Attributes Database'. The English edition will not have a title for this table.
354, E 4pb; 2-1b	(e.g. aerosol nozzle ® produce spray/mist ® mist/droplets/particles)	(e.g. aerosol nozzle → produce spray/mist → mist/droplets/particles)	[Mann June 2003] correct in 2 <sup>nd</sup> print
355, E 3pb-2pb	[These two paragraphs are indented about 10 mm.]	[No indentation.]	Correct as is

Page	Is	Has to be	Answer
Type		(Question/Comment)	
Parag.			
Line			
358, QS	of the overall system under	of the overall system under	okay
2pb; 3b	evaluation	consideration	
358, E	For the selected key problem	For the key problem functional	okay
1pb; 1	functional relationship	relationship selected in the	
	selected in the previous step,	previous step,	
359, QS	the time when the conflict is	the time when the conflict is	Correct as is
1p, 5-7	occurring (to define one	occurring and (to define	
	boundary of our	boundaries of our time-window)	
	time-window) and the time	the time immediately before the	
	immediately before the	problem occurs and (less likely,	
	problem occurs, or (less	but by no means impossible) the	
	likely, but by no means	time immediately after it has	
	impossible) immediately	disappeared.	
	after it has disappeared.		
359, QS	think about the negative	think about the negative	okay
2p; 2	functional relationship	functional relationship under	

	under evaluation	consideration	
359, Q	- if only because the idea of	[Q: I cannot understand the	if only because configuring
2pb; 4-5	'wanting the MUF and not	meaning of this sentence (in	the contradiction around
	wanting the MUF' or rather	English?) and the logic. Could	'not wanting the Main
	the 'not wanting' part of the	you rephrase it for non-native	Useful Function' is
	contradiction, is often	English readers?]	meaningless.
	meaningless.		
359, QS	–A is taken to represent the	–A is taken to represent the	okay
2pb; 3b	opposite function to A	opposite property to A	
360, QS	the x-component is able to	[To cover the full range of a	okay
1p; 2-1b	eliminate the harmful	negative functional relationship,	
	function B	how about adding as follows.]	
		the x-component is able to	
		eliminate the harmful function	
		B (or make the insufficient	
		function sufficient, or make the	
		excessive function appropriate)	
360, E	to solve the physical	to solve the physical	okay
1p; 1b	contradiction, C'.	contradiction C'.	
		[Delete a comma.]	
360, QS	to the specification outlined	to the specification obtained in	okay
2p; 7	in step f).	step f).	
361, E	resources are detailed in the	resources are detailed in the	okay
3p; 4	trigger sheet in Chapter 9,	trigger sheet in Chapter 14,	
362, E	the whole community of	the whole community of experts	okay
2pb; 1	exerts		
363, E	This 'increase lift' thus	This 'increase lift' requirement	[Mann June 2003]
3p; 2-1b	forms the bases	thus forms the bases	correct in 2 <sup>nd</sup> print
364, QS	The most obvious conflict	The most obvious conflict ( ),	Text is okay as is, but add a
1pb; 2-4	(), the one most likely to	which is the one most likely to	comma between lift and
	hazard our ability to achieve	hazard our ability to achieve lift,	appears
	lift appears	appears	
365, QS	to eliminate the harmful	to eliminate the negative	okay
4p; 1-2	function 'insufficient lift'	function 'insufficient lift'	
367, E	(for example is step b)	(for example in step b)	Okay
4p; 4-3b			

Page	Is	Has to be	Answer
Туре		(Question/Comment)	
Parag.			
Line			
369, QS	is one of the conceptually	is one of the conceptually most	okay
1p; 1-2	more simple of the TRIZ	simple of the TRIZ tools	
	tools		
369, E	it is a simplification than	it is a simplification that	okay
3p; 4	filters-out rather than	filters-out rather than distills	
	distills		
369, ES	decide which components	decide which components are	okay
3pb; 3	are potential candidates	potential candidates for	
	from trimming,	trimming,	
369, CS	questions are illustrated in	questions are illustrated in	okay

1pb, 1b	Figure 17.1 below.	Table 17.1 below.	
370, CS	Figure 17.1: Combined	Table 17.1: Combined	We will leave the text as is
Fig	TRIZ/DFMA Trimming	TRIZ/DFMA Trimming	
	Questions	Questions	
		[In this table the questions are	
		labeled as a, b, and are used	
		in the headings of the	
		subsequent explanations.]	
370, CS	Do I need the Function?	a. Do I need the Function?	We will leave the text as is
2p; h		[Insert the label of the question.	
		To be the same in the	
		subsequent headings.]	
370, QS	all of the functional	all of the functional	Text is correct as is
2p; 2-3	connections (i.e. all of the	connections (especially, all of	
	'useful' arrows	the 'useful' arrows	
370, CS	– see illustration below)	– see Figure 17.1)	okay
2p; 4			
370, CS	[No figure caption for the	Figure 17.1: Functions related to	Okay
illust.	illustration.]	the part under trimming	Important Function
		consideration	Relationships When
		[Please specify a better title.]	Considering Trimming A
			Component
370, E	-in many instances, they are	– in many instances they are	okay
3pb; 2b		[Insert a space after the dash.]	
		[Delete a comma.]	[Mann June 2003]
			correct in 2 <sup>nd</sup> print
370, E	If the FAA model has been	If the FAA model has been	okay
2pb; 5-6	drawn in a hierarchical	drawn in a hierarchical manner	
	manner (see Chapter 6,	(see Chapter 6, section 4),	
	section 3),		
370, E	Experience suggests, that if	Experience suggests that if an	[Mann June 2003]
2pb;	an answer exists, it will tend	answer exists it will tend	correct in 2 <sup>nd</sup> print
3-2b		[Delete two commas.]	
371, QS	that can help deliver the	that can help deliver the	okay
4p; 2	function.	function?	
371, QS	because either the need for	because the need for	okay
2pb; 2b	maintenance disappears	maintenance disappears	
371, QS	What can be determined is	What can be suggested is that	okay
1pb; 2b	that		
372, QS	– and thus the reason that	– and thus the reason that the	okay
3pb;	the design featured in the	design featured in the chapter	
4-3b	chapter on eliminating	focuses on eliminating	
	contradictions.	contradictions.	
372, E	On company recently took	One company recently took	[Mann June 2003]
2pb; 3			correct in 2 <sup>nd</sup> print
374, S	(S2) and the control system	(S2) and the control unit	Correct as is
2pb; 4			(NB Figure 17.4 should be
			shifted down two lines to sit
			above the figure title)
374, E	- as shown by the dotted red	– as shown by the dotted line.	[Mann June 2003]
2pb; 4b	line.		correct in 2 <sup>nd</sup> print
375, E	that would enable designer's	that would enable designers to	Okay
2p; 2	to discriminate	discriminate	

		[Delete an anostronhe]	
375 0	The classic example of	[Insort a blank line above for	Not a new paragraph
3nh: 1	[No blank line above this	explicitly making a new	Correct as is
000, 1	sentence	naragranh	0011001 as 15
375 QS	but adjustment of either	but adjustment of one function	okay
$3nh^{+}6-7$	(tap) has an influence on the	with oithor tan has an influence	UKAY
3pb, 07	othor	on the other function	
975 FQ	other.	on the principal machanism for	altar
070, EO 9nh: 1	for determining	as the principal mechanism for	окау
2pb, 1	Note also have to the loss float	Neter also have to taylor of float	Converting in
376, QS	Note also now to truly reflect	Note also how to truly reflect	Correct as is
2pb, 1	what happens in the mixer	what happens in the mixer tap,	
	tap, the FAA model	the FAA model	
		[Replace a comma with a	
977 F	De construction de la constructi	semi-colon.]	[ <b>M</b>
377, E	Paper Stapler	Case Study I – Paper Stapler	[Mann June 2003]
2p; h	[No blank line above.]	[Also insert a blank line above.]	correct in 2 <sup>nd</sup> print, but text
			should not be indented
377, E	Figure 17.8:	Figure 17.8:	[Mann June 2003]
Fig;	(Blue boxes represent	(Darker boxes represent	correct in $2^{nd}$ print
capt.			
378, E	the question 'are there any	the question 'are there any other	okay
2p; 5-4b	other ways of delivering the	ways of delivering the function	
	function 'join paper?' The	'join paper'?' The other	
	other	[Need another closing quotation	
		mark.]	
378, E	and specify 'in what	and specify 'in what direction	okay
2p; 4-3b	direction will a staple evolve	will a staple evolve in, and at	
	in, and <b>a t</b> what point does it	what point does it being a	
	being a staple?	staple?'	
		[Delete a space.]	
		[Insert a closing quotation	
		mark.]	
379, CS	Looking at the questions in	Looking at the questions in	okay
3pb; 2	Figure 17.1,	Table 17.1,	
379, QS	The next thing to do is	The next thing to do is to	okay
1pb;1	examine the attributes of	examine the attributes of the	
	the top-cover,	top-plate,	
		[Insert 'to'.]	
		[Replace top-cover with	
		top-plate.]	
380, QS	questions – like do the	questions – like 'do the	okay
1p; 3-4	magazine and top-plate have	magazine and top-plate have to	
-	to move relative to other, or	move relative to other, or be	
	be difficult to facilitate	difficult to facilitate assembly?' –	
	assembly – would	would	
		[Insert quotation marks and a	
		guestion mark.]	
380, ES	is 'what's stopping us from	is 'what's stopping us from	[Mann June 2003]
1p; 2-1b	trimming this component.)	trimming this component?)	correct in $2^{nd}$ print
-P/ = 10		[Replace a period with a	Print
		question mark.]	
		[Close the quotation mark]	correct in 2 <sup>nd</sup> print
380 E	and function analysis in	and function analysis	[Mann June 2003]
<u>, осо, н</u>	ana minonon anaryoto m	ana minomon anaryono.	Linumi o uno 2000j

2p; 1b	action.		correct in 2 <sup>nd</sup> print
380, E	– 'cover attribute 'apearance'	– 'cover attribute 'appearance'	okay
3p; 7b			
380, QS	none of them (as yet)	none of them (as yet) possesses	Correct as is
3p; 2-1b	possesses the aesthetic	the aesthetic capabilities like	
	capabilities of the cover.	the cover.	
380, E	The point of this final	The point of this final thought is	Correct as is
2pb; 1	thought being that it is	that it is absolutely essential	
	absolutely essential		
381, QS	Each stage also contains	Each step also contains	okay
2pb; 4			
382, E	As described in Chapter 5,	As described in Chapter 6,	5 is correct – no change
2p; 4			required
382, E	Here we immediately see	[Delete the line change, and	[Mann June 2003]
4p; 1	[A new line starts here.]	combine with the paragraph	correct in 2 <sup>nd</sup> print
		above.]	
382, CS	the questions detailed in	the questions detailed in Table	Okay
1pb; 1b	Figure 17.1.	17.1.	

Page	Is	Has to be	Answer
Туре		(Question/Comment)	
Parag.			
Line			
385, E	The questionnaire is	The questionnaire is repeated	[Mann June 2003]
4p; 1b	repeated here in Figure 18.1.	here.	correct in 2 <sup>nd</sup> print
385, E	Figure 18.1: Ideal Final	[Delete this caption and treat	[Mann June 2003]
Fig; h	<b>Result Problem Definition</b>	the content of the figure as	correct in 2 <sup>nd</sup> print
	Questionnaire	simple text.]	
385, QS	The second solution trigger	[Delete the line change and join	Delete line change – text
1pb; 2b	[This sentence is started as	this sentence to the preceding	should follow on
	a new line with a line	paragraph.]	immediately from preceding
	change.]	[Or else insert a blank line to	sentence
		start a new paragraph.]	
385, QS	is one with a much more	is one with a much more explicit	okay
1pb;	explicit set of problem	set of problem solving directions	
2-1b	solving directions to offer:	to offer as is detailed in the	
		following section.	
386, E	That analysis has taken as	That analysis has taken as its	correct in 2 <sup>nd</sup> print
3p; 3-4	its start point, the range of	start point the range of	
		[Delete a comma.]	
389, CS	[The figure 18.4 is too small	[Only the essential parts of the	We will see what we can do
Fig	to read.]	patent are to be shown with	to improve the figure
		modified arrangement.	
		Heading, abstract, and the	
		figure should be shown.]	
389, E	Self-X Patents' title	'Self-X Patents'	okay
2pb, h		[Insert an open quotation mark.]	
389, E	The searches covered the	The searches covered the period	[Mann June 2003]
2pb; 1b	period from 1985 to the	from 1985 to 2002.	correct in 2 <sup>nd</sup> print
	present day.		
394, ES	The main point, and the	The main point, and the	Correct as is

3p; 1-2	principal connection	principal connection between	
	between this kind of IFR	this kind of IFR definition and a	
	definition and a solving tool	solving tool, is that	
	is that	[Insert a comma.]	
395, E	1) Use the questionnaire in	1) Use the questionnaire in the	okay
3pb; 1	Figure 18.1 as a means	beginning of this chapter as a	
		means	
395, E	(akin to the 'self-service'	(akin to the 'self-service'	[Mann June 2003]
2pb;	Inventive Principle in	Inventive Principle in Chapter	correct in 2 <sup>nd</sup> print
2-1b	Chapter 10.	10).	
		[Insert a closing parenthesis.]	

Page	Is	Has to be	Answer
Туре		(Question/Comment)	
Parag.			
Line			
397, CS	Problem Solving:	Problem Solving Tools	Psychological Inertia
title	Psychological Inertia Tools	Psychological Inertia Breaking	Breaking
	[This title is not consistent	[or Breaking Psychological	
	with those in other	Inertia]	
	chapters.]		
397, CS	Introduction	[Delete this heading.]	okay
1p; h	[Other chapters do not have		
	this kind of heading.]		
398, E	Admit it, its one you applied.	Admit it, it's one you applied.	okay
1p; 1b		[Insert an apostrophe.]	
398, QS	But the rule was never	But the rule was never there,	Text is correct as is
2p; 1	there. Just as similar 'rules'	just as similar 'rules' are never	
	are never there	there	
		[Combine into a sentence.]	
399, E	Very simply, what the	Very simply, what the	okay
1p; 2-3	9-Windows asks us to do is	9-Windows asks us to do is to	
	think about	think about	
399, CS	each 'is the real problem	each 'is the real problem here?' –	okay
1p; 1b	here?'	Figure 19.3.	
399, ES	has directed you to this	has directed you to this Chapter,	okay
3p; 1b	Chapter that a little	that a little reminder	
	reminder	[Insert a comma.]	
399, ES	a special case of encouraging	a special case of encouraging the	Corrected to 'problem-owner'
1pb; 1b	the problem to zoom	problem solver to zoom	in the 2 <sup>nd</sup> print
401, E	We could chose to examine	We could choose to examine	okay
2p; 1			
401, QS	as a contradiction (think	as a contradiction (thing we're	okay
2p; 1	we're trying to improve is	trying to improve is pressure;	
	pressure; thing stopping us	thing stopping us	
401, E	[In Fig. 19.6]	(flow just about	okay
Fig.	(flow just about	to separate from wall)	
	To separate from wall)		
401, ES	approaching the separation	approaching the separation	okay
1pb; 1	problem,	point,	
402, E	– he (or she!) justs wants to	– he (or she!) just wants to	okay

2pb;			
3-2b			
403, QS	stay there and then hope	stay there and then help keep a	okay
1p; 5-6	they help keep a hold of the	hold of the problem person	
	problem person		
403, QS	in the overall context of the	in the overall context of the	Correct as is
2pb;	systematic creativity whole	systematic creativity which we	
2-1b	we are describing	are describing	
404, CS	[In Fig. 19.10: The label	[The label 'Time = 0' is drawn at	Figure is correct as is
Fig.	'Time = 0' is drawn close to	the left end of the figure and a	
	the center (or 'current	left-ward arrow is added to it.]	
	position').]		
405, ES	By way of example of some	By way of example, some of the	okay
2p; 1	of the things the tool may	things the tool may prompt us	
	prompt us	[Delete	
406, S	and so we will define that as	and so we will define that as our	okay
2pb;	our original problem.	original problem – Figure 19.12.	
2-1b			

Page	Is	Has to be	Answer
Туре		(Question/Comment)	
Parag.			
Line			
411, CS	Problem Solving Tools	Problem Solving Tools	Keep subversion analysis
title	Subversion Analysis	Design for Reliability	title as this is where the
	[Subversion Analysis is a	[This new title is the target of	main emphasis of the
	relatively small topic in this	various tools discussed in this	chapter lies
	chapter.]	chapter both in and out of TRIZ.]	
411, QS	The instinct of most people	The intuition of most people	Correct as is
1p; 1	discovering TRIZ is that	discovering TRIZ is that there is	
	there is		
411, QS	Certainly the instinct of this	Certainly the intuition of this	Correct as is
1p; 2b	author when faced	author when faced	
411, QS	for a method other than	for a method other than TRIZ as	okay
1p; 1b	TRIZ as a first instinct.	a first choice.	
411, QS	This instinct is in fact only	This intuition is in fact only	Correct as is
2p; 1	partially correct,	partially correct,	
411, E	Reliability	1) Reliability	okay
3p; h			
412, E	something that is	something that is comparatively	[Mann June 2003]
1p; 2	comparatively to design	difficult to design	correct in 2 <sup>nd</sup> print
412, E	effective 'design reliability'	effective 'design reliability'	[Mann June 2003]
1p; 3	almost demands	almost inevitably demands	2 <sup>nd</sup> print has 'inevitable' –
	consideration	consideration	this should be changed to
			'inevitably'
412, E	'someone, somewhere has	'someone, somewhere has	okay
2pb; 1-2	already solved something	already solved something like	
	like my problem, it appears	my problem', it appears	
		[Insert a quotation mark.]	
413, E	between the to curves	between the two curves	correct in 2 <sup>nd</sup> print
1pb; 1b			

414, E	The paradox in both cases, is	The paradox, in both cases, is	okay
2p; 3	that	that	
		[Insert a comma.]	
414, QS	Then we multiply in a 'fudge	Then we multiply it by a 'fudge	okay
3p; 5	factor'	factor'	
414, E	tends to happen next tie	tends to happen next time	[Mann June 2003]
3p; 7	around is	around is	correct in 2 <sup>nd</sup> print
415, QS	This despite the emergence	This is true despite the	Okay
1p; 6	of	emergence of	
415, QS	Too often these tools are	Too often these tools are used as	okay
1p; 2-1b	used as after the event	'after the event' analysis tools	
	analysis tools rather than	rather than 'before the event,	
	before the event, influence	influence the design' synthesis	
	the design synthesis tools.	tools.	
		[Insert four quotation marks.]	
415, E	this author always thinks	this author has observed many	[Mann June 2003]
2p; 2-1b	about a telling example from	examples from across all sectors	delete this paragraph
	days spent working in the	of engineering.	completely as it adds no
	aerospace industry.		value
415, QS	on the belief that if the	on the belief that the strongest	okay
3p; 4	strongest reliability	reliability improvement	
	improvement solutions are	solutions are	
		[Delete 'if'.]	
415, E	Table 1 extracts the most	Table 20.1 extracts the most	okay
1pb; 3-4	likely of the Inventive	likely of the Inventive Principles	
	Principles		
415, CS	Table 20.1 TRIZ Inventive	[Title of a table should be	Convention is to keep it
Table, h	Principles	written above the table.]	below in our book
	[Title is written below the		
	table.]		
416, E	Probability of failure, Z(t), is	Probability of failure, <b>F</b> (t), is	okay
3p; 3	given by:	given by:	
416, E	[In the equation of Z(t), an	[The operator should be a	correct in 2 <sup>nd</sup> print
4p; 2	operator is show by a	multiplication.]	
	bi-directional arrow symbol.]		
417, E	a very limited start ppoint	a very limited start point	okay
1p; 2b			
418, QS	of each system failure mode	of each system failure mode (top	okay
1pb; 2b	(top level event) is	event) is	
		[This term is introduced first as	
		'top event' but appears as 'top	
		level event' at several places	
		around here. Better to make	
		them consistent.]	
419, E	[In the second equation of	[The operator should be a	correct in 2 <sup>nd</sup> print
1p; 4	$F_{\rm s}$ , the operator is printed as	'nearly equal' operator.]	
	a cup operator.]		
419, E	[In the equation of $F_s$ , four	[The operators should be	correct in 2 <sup>nd</sup> print
1p; 6	operator are printed by	multiplication operators.]	
	bi-directional arrow		
	symbols.]		
419, S	[In Figure 20.8, AND and	[Labels are attached to the AND	We will leave as is in the
Fig	OR gates are used without	and OR gates.]	next print.

	explanation.]		
420, CS	"What happens if this	'What happens if this component	correct in 2 <sup>nd</sup> print
1p; 3	component fails?"	fails?'	
422, ES	artificial intelligence.	artificial intelligence. The	okay
2p; 3-4	The results of a FMECA	results of a FMECA	
	[A line change is inserted	[Delete a line change.]	
	between these sentences.]		
422, ES	such as high and low.	such as high and low. Insertion	Okay
4pb;	Insertion of particular	of particular components	
4-3b	components	[Delete a line change.]	
	[A line change is inserted		
	between these sentences.]		
422, S	to other design for reliability	to other 'design for reliability'	okay
3pb;	tools.	tools.	
2-1b			
422, S	making the design for	making the 'design for	okay
1pb; 1-2	reliability task more	reliability' task more	
	interesting.	interesting.	
422, E	people feel when asked to	people feel when asked to do the	[Mann June 2003]
1pb; 3	don the black hat	black hat	correct in 2 <sup>nd</sup> print – 'don' is
			the same as 'put on'
423, QS	other principle thing that	other principal thing that TRIZ	okay
1p; 2	TRIZ adds	adds	
423, ES	TRIZ adds to the design fro	TRIZ adds to the 'design for	[Mann June 2003]
1p; 2	reliability story	reliability' story	okay
		[Replace 'tro' with 'tor'.]	1
400 GG		[Insert quotation marks.]	okay
423, CS	If a failure mode exists,	[Maybe better to indent and	Correct as 1s
2p	[This sentence is italicized	italicize, but without a box.]	
492 00	and enclosed in a box.]	[Comp of the lines should be	We will see what we see do
423, US	[In Fig. 20.10, some lines in	[Some of the lines should be	we will see what we can do
гıg	the drawing are too thin to	drawn thicker.]	
494 OS	for example 'mechanical	for oxample 'machanical field	okay
424, 00	field (or wibration) on body	(or wibration) of body sats on	UKAY
1p, 0 0	acts on tube to produce a	tube to produce a channel!	
	channel	[Replace 'on' with 'of']	
	channel.	[Insert a quotation mark]	
424 QS	probably not help solve the	probably not help solve the	Text is correct as is
1pb; 3	problem so why bother it	problem, 'so why bother? it	(The meaning is about if we
100/0	would not be entirely	would not be entirely	do all this hard work and
	unjustified.	unjustified'.	still don't necessarily
		[Not easy for me to understand	produce an answer, what
		this colloquial expression.]	was the point?)
425, QS	in designing products to very	in designing products to very	okay
2p; 3	high (i.e. failure rates of	high reliability (i.e. failure rates	
	$10^{-12}$ or better).	of $10^{-12}$ or better).	
425, QS	a given design will only	a given design will only deliver a	Correct as is
3p; 3-2b	deliver a certain maximum	certain maximum (usually	
	(usually unknowable a	unknowable a priori) reliability	
	priori) failure rate	capability.	
	capability.		
426, QS	means of avoiding repeat	means of avoiding repeated	okay

3p; 1b	mistakes are necessary:	mistakes are necessary:	
427, E	the design capability	the design capability evolution	okay
3p; 1	evolution trend illustrated	trend illustrated in Figure 20.11,	
	in Figure 20.13,		

Page	Is	Has to be	Answer
Туре		(Question/Comment)	
Parag.			
Line			
429, QS	'Best' Selection?	'Best' Selection	Correct as is
3pb; h		Simple MCDA	
		[Delete a question mark.]	
		[Insert a lower level heading to	
		introduce the important term.	
		I feel that this kind of lower	
		level headings are better	
		inserted in various sections of	
		the whole book. I will check this	
		point later.]	
430, CS	In the case of 'qualitative'	In both cases of 'quantitative'	Okay
3pb; 2-3	criteria, it is necessary to	and 'qualitative' criteria, it is	
-	allocate some form of	necessary to allocate some form	
	numerical scoring system.	of numerical scoring system.	
		[More careful handling of the	
		'quantitative' criteria is also	
		necessary, I think.]	
431, QS	note how the price, running	note how the price, running cost	okay
3p; 2-3	cost and acceleration scores	and acceleration (i.e. time	
-	have been inverted	needed to get a certain speed	
		form the standing position)	
		scores have been inverted	
431, CS	[No heading at the start of	Ratio-scaling MCDA	Correct as is
1pb; h	this paragraph.]	[Since this is an important term	
-		to be introduced here, we should	
		better have a subtitle to lead	
		this subsection.]	
432, E	1) The user selects on of the	1) The user selects one of the	okay
4p; 1	solution candidates	solution candidates	
432, E	twice as good, a '0.5' that it	twice as good, a '0.5' that it is	[Mann June 2003]
5p; 1b	is half is good, and so on.	half as good, and so on.	okay
432, QS	an accurate description of	an accurate description of the	Correct as is
2pb; 3	the true differences between	true significant differences	
	different values.	between different values.	
433, QS	Figure 21.3 below provides	Figure 21.3 below provides an	okay
1p; 1	an example ratio-scaling	example of ratio-scaling analysis	
	calculation for the analysis	and calculation for the problem	
	previously conducted for	previously conducted for Figure	
	Figure 21.1.	21.1.	
433, QS	were subjected to the	were subjected to the	Correct as is
3p; 2	ratio-scaling calculation	ratio-scaling data-acquisition	
-		and calculation	

433, CS	The raw scores were then	[Even though natural	We will stay with the
3pb; 1	processed by first taking	logarithms are taken in the	current form for now – no
	logarithms.	table, ordinary logarithms may	changes required
	-	be better to use.]	
434, E	the elements analysed	the elements analysed during	[Mann June 2003]
1p; 3b	during this activity ill be the	this activity will be the ones	correct in 2 <sup>nd</sup> print
	ones		
435, E	a god solution.	a good solution.	[Mann June 2003]
2pb; 3b			correct in 2 <sup>nd</sup> print
436, S	If the solution meets all of	If the solution meets all of the	okay
1p; 3-4	the requirements stated	requirements stated here, then	
	here then we	we	
		[Insert a comma.]	
437, QS	In terms of is your solution	In terms of 'is your solution good	okay
3p; 1	'good enough', you are	enough?', you are	
		[The quotation marks are	
		shifted to cover the whole	
		question.]	
437, E	1) CreaTRIZ v2.2,	1) CreaTRIZ v3,	[Mann June 2003]
Ref.			correct in 2 <sup>nd</sup> print

Page	Is	Has to be	Answer
Туре		(Question/Comment)	
Parag.			
Line			
439, ES	is thus explained by the	is thus explained by the small	okay
2p; 6	point marked on the figure	oval marked on the figure	
439, ES	The point suggests that	The oval suggests that	okay
2p; 7			
439, E	This paper discusses the	This chapter discusses the	okay
2p; 5b	emergence	emergence	
440, E	The second, longer, part of	The second, longer, part of the	okay
1p; 3-4	the paper examines	chapter examines	
440, E	the paper focuses	the chapter focuses	Okay
1p; 2b			
441, S	[In the middle of the figure	[The box of TRIZ is show in light	Correct as is
Fig.	TRIZ is shown but its range	gray for clarity.]	
	is not clearly seen.]		
442, E	The paper briefly reviews	The chapter briefly reviews	okay
1p; 2			
443, S	[Questions are itemized	[The questions are labeled as a,	We will leave them as $is - no$
Fig	without labels.]	b, in the same manner as in	changes required
		Chapter 17.]	
443, Q	although the AD scheme for	[It is not easy to parse this	Start a new sentence after
2pb;	correlating the functional	clause correctly.]	'part of TRIZ.' The AD
3-1b	requirements of a system to		scheme for mapping
	the selected design		functional requirements to
	parameters to the		design parameters and then
	subsequent method of		design parameters to
	manufacture may offer some		process variables offers some
	additional benefits to TRIZ.		additional benefits to TRIZ.

443, E	hypothesised in this paper),	hypothesised in this chapter),	okay
1pb; 2b			
444, QS	'apples versus oranges'	'apples versus oranges'	okay
1p; 2-3	comparisons between	comparisons between different	
	different systems.	solutions.	
444, ES	TRIZ on the other hand, has	TRIZ, on the other hand, has	okay
3p; 1	much to offer Six Sigma.	much to offer to Six Sigma.	
		[Insert a comma.]	
		[Insert 'to'.]	
444, QS	a contradiction (the	a contradiction (the principal	okay
3p; 3b	principle reason why	reason why systems hit	
	systems hit fundamental	fundamental limits)	
	limits)		
445, QS	and the concept of	and the concept of psychological	Dash would be better as 'it'
2p; 2-1b	psychological inertia and	inertia and tools to overcome –	i.e. 'tools to overcome it all
	tools to overcome all exist in	all exist in some form in both	exist'
	some form in both pieces of	pieces of work.	
	work.	[Insert a dash.]	
446, QS	identification of how the	identification of how the	underlie the way the
2p; 3b	meta-programmes	meta-programmes underlie the	human brain works, and
	underlying the way the	way the human brain work	how they in turn
	human brain work		
447, QS	to the evolution of such a	to the evolution of such a	We believe that one of the
1p; 1	'systematic creativity' model	'systematic creativity' model	fundamental factors
	is that it will emerge	that it will emerge	enabling the evolution of
		[Delete 'is'.]	such a 'systematic creativty'
			model is that it will
			emerge
448, E	14) Domb, E., 'Using	14) Lodge, M. 'Magnitude	okay
Ref.	TRIZ	Scaling	
	15) Lodge, M. 'Magnitude	15) Domb, E., 'Using TRIZ	
	Scaling	[Interchange Ref. 14 and Ref.	
		15.]	
448, E	20) CreaTRIZ v2.2,	20) CreaTRIZ v2.2 or higher,	[Mann June 2003]
Ref.	www.creax.com	www.creax.com	correct in 2 <sup>nd</sup> print

PS. Appendices will be checked later.