Bernard Bolzano

Theory of Science

Volume Four

Translated by Paul Rusnock and Rolf George

Introduction to Volume Four

BOOK F	IVE: THEORY OF SCIENCE PROPER	1
§. 392.*	Content and divisions of this book	1
Part I: Ge	eneral Rules	3
§. 393.*	Definition and justification of the concepts of science and	
	treatise	3
§. 394.	Other definitions of these concepts	8
§. 395.*		14
§. 396.*	Immediate consequences: 1) The science we intend to present	
	in a treatise must merit inclusion in the ranks of the sciences	18
§. 397.*	2) The class of readers for whom our book is intended should	
	be appropriately chosen	18
§. 398*.	3) A suitable treatise must make what it presents in print as	
	easily and securely understandable to its readers as possible	19
§. 399.*	4) It must attempt to make the most important ideas,	
	judgements, and inferences distinct	19
§. 400*.	5) It must confer the appropriate degree of confidence upon	
	every thesis, and make its degree of reliability evident	20
§. 401.*	6) A suitable treatise must indicate the objective connection	
5	between truths insofar as this is possible	21
§. 402.*	7) A suitable treatise must attempt to counteract any	
0	disinclination the reader may have to recognise the truth	22
§. 403.*	8) A suitable treatise must also make it as easy as possible	
	to locate, retain, and recall the theses it presents	23
	······································	

xxiii

§. 404.*	9) There must be signs for the concepts occurring in the science in question which the reader will find convenient	
	for his own use	24
§. 405.*	10) One must also take care to ensure that the reader obtains	
	appropriate images of the objects that are dealt with	25
§. 406.*	11) The book must be arranged in a way that promotes as	
	much as possible its correct use by the reader	25
§. 407.*	12) A suitable treatise must be organised in a way that en-	
	sures that any faults it may have cause the reader the least	
	possible harm	26
§. 408.*	13) A suitable treatise must permit its readers to see the	
	reason for most of its features	26
Part II: O	In the Determination of the Extensions of the Sciences	29
§. 409.*	Consequences of various ways of delimiting the extensions	
0	of sciences	29
§. 410.*	1) No science need be specified for a truth that cannot be	
	expressed in writing	30
§. 411.*	2) Every truth communicable by writing that is noteworthy	
	not merely as a supporting proposition should belong to at	
	least one science	32
§. 412.*	3) Having too small an extent is not a sufficient reason for	
	rejecting a science, though having too great an extent may be	34
§. 413.*	4) The fact that all of its theses are already known is not a	
	sufficient reason for rejecting a science	35
§. 414.*	5) The fact that truths are quite similar is not a sufficient	25
0 11 - 1	reason for uniting them	35
§. 415.*	6) A great difference between truths, in particular, the fact	
	that they come from a completely different source of knowl-	37
8 116 *	edge, is not a sufficient reason to separate them	51
§. 416.*	7) There may be sciences which have certain theses in com- mon, and even one science wholly contained within another	39
\$ 117 *	8) One science may depend upon another either from the	39
8.417.	subjective or the objective point of view, or both	41
§. 418.*	• • •	41
ş. 710.	each other	42
§. 419.*	10) One should not demand that a science which contains a	
J. 115.	truth also contain its applications	43

§. 420.*	11) One should not demand that all the truths of a science	
	depend upon the same objective or subjective principle	44
§. 421.*	12) It is a very good thing to classify truths according to	
	attributes that can be used to inquire about them	45
§. 422.*	13) If a pure concept, particularly a simple one, occurs ex-	
	clusively in certain truths, then one may expect that these	
	truths deserve to be united in a single science	46
§. 423.*	14) For every inquiry there is a place in a science where it	
	may most fruitfully be presented	47
§. 424.	Investigating whether a given science meets its purpose	48
§. 425.	Devising a concept of a suitable science	50
§. 426.	Division of the entire domain of truth into individual sciences	51
§. 427.	Other views	54
Part III: (On the Choice of a Class of Readers for a Treatise	58
§. 428.*	Consequences of various ways of determining our class of	
	readers	58
§. 429.	Rules for judging the appropriateness of a given class of	
	readers	59
§. 430.	Several classes of readers that must be distinguished in al-	
	most all treatises	60
§. 431.	The most common mistakes made in carrying out this task	61
Part IV: (On the Propositions which Should Appear in a Treatise	63
§. 432.*	Content and chapters of this part	63
§. 433.	The signs we use in a treatise must refer immediately to	
	complete propositions	63
§. 434.*	Various ways propositions can occur in a treatise	65
§. 435.*	Three ways in which the reader may use the propositions	
	occurring in a treatise	67
§. 436.*	Three kinds of relations in which the propositions we intend	
	to present may stand to our science	68
Chapter 1	1: On the Essential Propositions of a Treatise	70
§. 437.	In every treatise some propositions must be advanced as es-	
	sential	70

§. 438.	How do we judge whether a given proposition belongs to our science?	70
§. 439.	What does it mean to say that a proposition is sufficiently	
a 440 t	noteworthy?	71
§. 440.*		
	mand that the reader impress it upon his memory?	72
§. 441.*		_
0 1 1 0 1	meant to consider it only once?	73
§. 442.*		_
	can at least be consulted upon occasion?	73
§. 443.*	1 0	_
	nature of the readers	74
§. 444.	Does the more general truth merit precedence over the par-	_
	ticular truth?	76
§. 445.	Do truths that follow immediately from a truth deserve to	
	be presented along with it?	78
§. 446.	Do equivalent propositions deserve to be presented along-	_
	side one another?	78
§. 447.	Whether merely analytic or identical propositions, as well	
	as propositions with redundant and imaginary ideas, may	
	be presented as essential doctrines	79
§. 448.	Can a purely negative proposition sometimes merit presen-	
	tation?	82
§. 449.	May we also present propositions that are merely probable	_
	in our treatise?	83
§. 450.	Does the mere possibility of an attribute sometimes deserve	_
	to be presented?	85
§. 451.	May we present propositions we regard as essential in any	
	way other than advancing them?	87
§. 452.	Warning against several mistakes	88
Chapter	2: On Supporting Propositions	89
§. 453.*	attempt to confer upon a proposition which we advance as	
	essential?	89
§. 454.	What influence does the nature of our readers have on the	
	nature of our supporting propositions?	90
§. 455.	General rules	91

8.	456.	tions even if we consider them mistaken?	92
8	457.	May we employ empirical supporting propositions in a sci-	2
3.	1571	ence that concerns only purely conceptual truths, and vice	
		versa?	93
§.	458.	Where should grounds of proof based on authority be used?	95
§.	459.	Which supporting propositions should we merely refer to,	
U		and which should we prove?	97
§.	460.	In what ways may supporting propositions occur in a treatise?	97
Ch	apter 3	8: On Occasional Propositions	98
8	461.*	General rule	98
•	462.*	I. Determination and justification of the concept of our sci-	70
8.	402.	ence	98
8	463.*	II. Determination of the relations between our science and	70
3.	105.	other sciences	100
8.	464.*	III. Historical information about our science	100
	465.*	IV. Indication and justification of the rules we followed in	100
0		composing our book	102
§.	466.*	V. Determination and justification of our class of readers .	102
§.	467.*	VI. Description of the usefulness of our science and our	
		treatise	103
§.	468.*	VII. Acknowledgement of the deficiencies of our science	
		and our treatise	104
§.	469.	VIII. Requests to the reader	105
§.	470.*	IX. Applications	107
-	471.*	X. Warnings against misunderstandings and misuse	109
§.	472.	XI. Divisions in the book	110
-	473.	XII. Transitions and questions	111
-	474.	XIII. Repetitions and references	113
	475.	XIV. Overviews	114
-	476.	XV. Fiction	115
	477.	XVI. Propositions setting out terminological requirements	118
§.	478.	XVII. Indication of our name and other information about	
	170	ourselves	118
§.	479.	XVIII. Indication of an idea that applies exclusively to our	110
e	400	book	119
8.	480.	Further information concerning our book as merchandise .	120

§.	481.	The various ways in which occasional propositions may oc- cur in a treatise	120
Ch	-	I: Constituents of a Treatise whose Special Character De- from Other Factors	121
§.	482.*	Contents of this chapter	121
I. (On Bas	ic Propositions	121
§.	483.*	The concept of a basic proposition, or principle; various	
		kinds of these and their uses	121
§.	484.	Principles may belong to any of the three previously con-	
0	40.5	sidered kinds of proposition	129
<u></u> .	485.	Principles [basic propositions] must always be true propo-	120
2	486.	sitions	130 131
-	480. 487.*	Nor need such principles and their relation to the science be	151
8.	407.	immediately evident	131
8	488.	Must such principles always be purely conceptual truths or	151
2.	400.	provable from concepts alone?	132
<u></u> .	489.	What degree of certainty should we confer upon a principle?	134
	490.	Errors in this business	134
§.	491.	Other views on these matters	135
II.	On Co	mparisons and Distinctions	140
8.	492.*	Concept and use of comparisons and distinctions	140
	493.	These may belong to any of the three kinds of propositions	141
	494.	Incorrect comparisons are generally more harmful than in-	
0		correct distinctions	142
§.	495.	Comparisons and distinctions can also be useful if we merely	
		indicate but are unable to prove them	143
§.	496.*	When making comparisons or distinctions, we will do well	
		to place the point of comparison or distinction under its own	
		concept	143
	497.	May similes be included in a treatise?	144
	498.	Mistakes in carrying out this task	145
§.	499.	Other views	146

146

III. On Determinations

§. 500.*	Concept and use of determinations	146
§. 501.	They may also belong to any of the three kinds of propositions	147
§. 502.	Determinations concerning the essence of an object are of	
	the highest value, though others, even analytic ones, are not	
	to be scorned	148
§. 503.	Do determinations stating relations or the mere possibility	
·	of an attribute merit inclusion?	150
§. 504.	Do negative determinations merit inclusion?	152
§. 505.	Are determinations involving classifications worthy of in-	
3. 0001	clusion?	153
§. 506.	May determinations in a treatise contain redundancies?	154
§. 507.	How should determinations that are also supposed to fur-	104
3. 507.	nish indicators be constituted?	154
§. 508.	Mistakes in this business	155
ş. 500. §. 509.	Other views	155
ş. 507.		150
IV. On De	scriptions	159
§. 510.*	Concept and use of descriptions	159
§. 511.*	The circumstances in which descriptions should be added,	
	and how they should be constituted	161
V. On Pro	ofs	163
§. 512.*	Concept and use of proofs in a treatise	163
§. 513.	To which of the three kinds of proposition may the proofs	105
3. 010.	in a treatise belong?	164
§. 514.	Which propositions in a treatise should be proved?	165
§. 514.	Which presuppositions and modes of inference may be used	105
3. 515.	in a proof?	166
§. 516.*	Proofs in a treatise must make it as easy as possible for	100
ş. 510.	readers to achieve the stated degree of conviction	170
§. 517.*	Proofs in a treatise should emphasise the grounds upon which	170
ş. 517.	they are based as distinctly as possible	170
§. 518.*		170
y. 510.	In which propositions and interances in a proof should we	
	To which propositions and inferences in a proof should we call particular attention?	172
\$ 510	call particular attention?	172
§. 519.	· ·	172 173

§. 520.	If possible, proofs in a treatise should themselves determine	
	the proper degree of confidence	175
§. 521.	It is always fitting for the proofs in a treatise to appear	
	united in a single proposition	177
§. 522.*	Other virtues of such proofs: a) Ease of retention	178
§. 523.*	b) Comprehensible steps	178
§. 524.*	c) Explaining how the proposition might have been discov-	
	ered	179
§. 525.*	d) Explaining the objective ground of the truth	180
§. 526.	e) Imparting other knowledge	181
§. 527.	Do the proofs we give in a treatise always have to be the	
	very ones that convinced us?	182
§. 528.	What should we do when more than one proof is available?	182
§. 529.*	Proofs with a mixed, or progressive and regressive, procedure	184
§. 530.*	Proofs by reduction to absurdity	186
§. 531.*	Proofs by induction and analogy	197
§. 532.*	Proofs from mere concepts and proofs from experience	198
§. 533.	Proofs based on authority	203
§. 534.	Proofs based on the reader's conceptions	203
§. 535.	Proofs that are only supposed to show that the probability	
	of a proposition exceeds a given quantity	205
§. 536.*	Survey of the most common flaws that may afflict proofs in	
	a treatise. a) Pertaining to matter	206
§. 537.*	b) Pertaining to form	207
VI. On Ol	bjections and Replies	208
§. 538.*	Concept and use thereof	208
§. 539.	Which objections and replies should be included?	210
§. 540.	How should the objections included in a treatise be com-	
3. 0.101	posed?	212
§. 541.*	How objections must be constituted	213
§. 542.	Mistakes in this business	218
§. 543.	Other views	219
VII. On E	xamples	219
§. 544.*	Concept and use of examples	219
§. 544. §. 545.	How examples must be composed in order to facilitate un-	217
8. 545.	derstanding	222

§.	546.	How examples may also be used to abridge our presentation	223
§.	547.	How examples can promote attentiveness	224
§.	548.	How examples also facilitate retention and recall	225
§.	549.	How examples must be constituted if they are to serve as	
		confirmations or proofs	225
§.	550.	How examples should be used to spread other truths	226
VI	II. On t	he Consideration of Mere Ideas and Propositions	227
§.	551.*	On the necessity of considering mere ideas and propositions	227
§.	552.	Which ideas and propositions should be the object of spe-	
		cial consideration in a treatise?	228
§.	553.	To which inner and outer attributes should such considera-	
		tion be extended?	229
A.	On the	Definition of Ideas and Propositions	230
§.	554.*	Which ideas and propositions in a treatise merit definition?	230
§.	555.*	Which definitions require a special proof of correctness? .	231
§.	556.*	How such proofs should be carried out; in particular, a) if	
		the idea is claimed to be simple	232
§.	557.*	b) How to prove a definition that indicates how a complex	
		concept is composed	233
§.	558.	c) How proofs of the correctness of a definition of a given	
		proposition should be carried out	235
§.	559.	Other views	236
B.	On Coi	mparing and Distinguishing Mere Ideas and Propositions	244
§.	560.*	When and in what manner comparisons and distinctions	
		concerning mere ideas and propositions should be added .	244
C.	On Cla	ssifications	245
§.	561.*	Various kinds of classifications; their benefits	245
	562.*	Attributes of classifications that are supposed to acquaint us	
		with noteworthy objects	248
§.	563.*	On the constitution of classifications that are to be used in	
		proofs	249
§.	564.*	On the constitution of classifications that are supposed to	
		facilitate retention and recall	250

§. 565.*	Attributes of classifications that are supposed to make it	
	easier to locate truths	251
§. 566.	Further virtues of classifications	251
§. 567.	Does the idea of the terms always have to be composed of	
0	the idea of the whole to be divided?	253
§. 568.	Is it a flaw if a classification contains terms that can also be	
Ū.	looked upon as terms of a sub-classification?	253
§. 569.	It is often necessary to divide the same whole in different	
0	ways	255
§. 570.	Whether and in which cases a classification should be ac-	
0	companied by the basis of the classification	255
§. 571.	May the difference between the terms of the classification	
0	be based upon a mere relation and, in particular, based on	
	quantity?	257
§. 572.*	Most of the classifications presented in treatises must be	
0	justified	258
§. 573.	How should such justifications be carried out?	259
§. 574.	Mistakes in this business	260
§. 575.	Other views	265
D. On Ind	licating Objective Connections	269
		269 269
§. 576.*	When should we indicate objective connections?	
§. 576.* §. 577.	When should we indicate objective connections? How should such indications be composed?	269
§. 576.*	When should we indicate objective connections?	269 270
§. 576.* §. 577. §. 578.	When should we indicate objective connections? How should such indications be composed?	269 270
 §. 576.* §. 577. §. 578. Part V: O	When should we indicate objective connections? How should such indications be composed?	269 270 272 274
 §. 576.* §. 577. §. 578. Part V: O §. 579.*	When should we indicate objective connections?	269 270 272 274 274
 §. 576.* §. 577. §. 578. Part V: O §. 579.* §. 580.* 	When should we indicate objective connections?	269 270 272 274 274 274
 §. 576.* §. 577. §. 578. Part V: O §. 579.* §. 580.* §. 581.* 	When should we indicate objective connections?	269 270 272 274 274
 §. 576.* §. 577. §. 578. Part V: O §. 579.* §. 580.* 	When should we indicate objective connections? How should such indications be composed? Mistakes in this business n the Divisions of a Treatise Contents of this part The utility of divisions General rules for the business of division Particular kinds of divisions: I. Those based upon the spe-	269 270 272 274 274 274 274
 §. 576.* §. 577. §. 578. Part V: O §. 579.* §. 580.* §. 581.* §. 582. 	When should we indicate objective connections? How should such indications be composed? Mistakes in this business n the Divisions of a Treatise Contents of this part The utility of divisions General rules for the business of division Particular kinds of divisions: I. Those based upon the special way in which propositions are brought forward	269 270 272 274 274 274
 §. 576.* §. 577. §. 578. Part V: O §. 579.* §. 580.* §. 581.* 	When should we indicate objective connections? How should such indications be composed? Mistakes in this business n the Divisions of a Treatise Contents of this part The utility of divisions General rules for the business of division Particular kinds of divisions: I. Those based upon the special way in which propositions are brought forward II. Divisions based upon the inner nature of the parts they	269 270 272 274 274 274 276 280
 §. 576.* §. 577. §. 578. Part V: O §. 579.* §. 580.* §. 581.* §. 583. 	When should we indicate objective connections? How should such indications be composed? Mistakes in this business n the Divisions of a Treatise Contents of this part The utility of divisions General rules for the business of division Particular kinds of divisions: I. Those based upon the special way in which propositions are brought forward II. Divisions based upon the inner nature of the parts they create	269 270 272 274 274 274 274
 §. 576.* §. 577. §. 578. Part V: O §. 579.* §. 580.* §. 581.* §. 582. 	When should we indicate objective connections? How should such indications be composed? Mistakes in this business n the Divisions of a Treatise Contents of this part The utility of divisions General rules for the business of division Particular kinds of divisions: I. Those based upon the special way in which propositions are brought forward II. Divisions based upon the inner nature of the parts they create III. Divisions based upon the relations between the parts	269 270 272 274 274 274 274 276 280 280
 §. 576.* §. 577. §. 578. Part V: O §. 579.* §. 580.* §. 581.* §. 583. §. 583. §. 584. 	When should we indicate objective connections?	269 270 272 274 274 274 276 280
 §. 576.* §. 577. §. 578. Part V: O §. 579.* §. 580.* §. 581.* §. 583. 	When should we indicate objective connections? How should such indications be composed? Mistakes in this business n the Divisions of a Treatise Contents of this part The utility of divisions General rules for the business of division Particular kinds of divisions: I. Those based upon the special way in which propositions are brought forward II. Divisions based upon the inner nature of the parts they create III. Divisions based upon the relations between the parts	269 270 272 274 274 274 274 276 280 280 281

§.	588.	VII. Divisions based upon the relation of propositions to the reader's sensibilities	284
8	589.	VIII. Divisions that facilitate understanding	285
-			
-	590.	IX. Divisions aimed at making it easier to locate propositions	
-	591.	X. Divisions that are supposed to promote retention and recall	280
8 .	592.	XI. Divisions based upon the relations of propositions to	200
0	502	our science	286
§ .	593.	XII. Divisions based on the relations between the parts they	200
	504	create and our treatise	288
§ .	594.	Survey of the most common mistakes in the business of di-	202
	505	vision	293
§.	595.	A glance at other presentations of this topic	295
Par	t VI: C	On the Order in which the Propositions Belonging to a Trea-	
	tise Sh	ould Appear	297
§.	596.*	Contents and chapters of this part	297
ş.	597.*	What should one understand by the order of propositions at	
Ũ		issue here?	297
§.	598.*	The importance of adopting one order rather than another .	298
Ch	apter 1	: General Rules of Order	299
8	599.*	On the various ways a proposition that is later to be ad-	
8.	577.	vanced may be brought forward	299
8	600.*		2))
3.	000.	has already been advanced	303
8	601.*	What other kinds of propositions should always be pre-	505
8.	001.	sented before advancing a proposition?	304
8	602.	What influence should the objective connection between	504
3.	002.	our propositions have on their order?	306
8	603.*		500
ş.	005.	considered when ordering them?	308
8	604.	To what extent should the relation of the reader's sensibil-	
3.	0011	ities to our propositions be taken into consideration when	
		ordering them?	310
8	605.*	•	
3.	202.	precede others?	311
8	606.*	To what extent should easier propositions be placed earlier?	312

§	. 607.	To what extent must we always claim more in succeeding	
		propositions?	312
§	. 608.	To what extent should more general propositions precede	
		those which are more particular?	313
§	. 609.*	To what extent should simpler truths precede those that are	
		more complex?	315
§	. 610.	To what extent should conceptual propositions precede em-	
		pirical ones?	316
ş	. 611.	To what extent should propositions we can prove a priori,	
		or from mere concepts, precede others for which this is not	
		the case?	317
§	. 612.	To what extent should the similarity between certain propo-	
		sitions have an influence on their order?	318
ş	. 613.*	To what extent should the objects dealt with by certain propo-	
-		sitions exercise an influence on their order?	318
8	. 614.	To what extent should propositions be presented in the order	
Ŭ		in which they were or could have been discovered?	320
Ş	. 615.	How the mere ordering of our theses can facilitate under-	
U		standing	321
Ş	. 616.	How the mere ordering of our theses can make it easier to	
0		locate them	322
8	. 617.	How the mere ordering of our theses can facilitate retention	
0		and recall	325
8	. 618.	Limits to be observed in striving to attain the above-mentioned	
0		aims	326
8	. 619.	Should the love of the familiar or of novelty have any influ-	
3		ence on the ordering of our propositions?	328
8	. 620.	What influence do the divisions made in our book have on	020
3	. 020.	this order?	329
8	. 621.	Sometimes the nature of the theses themselves provides no	02)
э	. 021.	basis for their ordering	330
8	. 622.	We should almost always indicate the rules of ordering we	000
э	. 022.	follow, and often must justify them	330
		Tonow, and orien must justify ment	550
Cł	apter 2	2: Particular Rules	331
8	. 623.*	What is special about the ordering of essential theses	331
	. 624.	Whether supporting propositions should ever be presented	201
3		before the reader knows why they are necessary	332
8	. 625.*	Special rules for ordering occasional propositions	334

§.	626.	The place for principles	338
§.	627.	The place for comparisons and contrasts, as well as deter-	
		minations	339
§.	628.	The place for descriptions	340
§.	629.	The place for proofs	340
§.	630.	The place for objections and replies	341
§.	631.	The place for examples	342
§.	632.	The place for mere consideration of ideas and propositions,	
		in particular: a) Definitions	343
§.	633.	b) The place for comparing and contrasting mere ideas and	
		propositions	344
§.	634.	c) The place for classifications	344
§.	635.	d) The place for indicating objective connections	346
§.	636.	A glance at other presentations	346
_			
Pai		Theory of Signs or, On the Signs Used in or Recommended	
	by a T	reatise	352
8	637.*	Contents and chapters of this part	352
0	637.* 638.*	Contents and chapters of this part	352
0	637.* 638.*	Survey of the most important benefits that may be had through	
§.	638.*	Survey of the most important benefits that may be had through a suitable choice of signs	
§.		Survey of the most important benefits that may be had through	352
§. §.	638.* 639.	Survey of the most important benefits that may be had through a suitable choice of signs	352 353
§. §.	638.* 639.	Survey of the most important benefits that may be had through a suitable choice of signs	352 353
§. §. Ch	638.* 639. apter 1 Own U	Survey of the most important benefits that may be had through a suitable choice of signs	352 353 s
§. §. Ch	638.* 639. apter 1	Survey of the most important benefits that may be had through a suitable choice of signs	352 353 s 354
§. §. Ch §.	638.* 639. apter 1 Own U 640.*	Survey of the most important benefits that may be had through a suitable choice of signs	352 353 s 354 354
§. §. Ch §. §.	638.* 639. apter 1 Own U 640.* 641.*	Survey of the most important benefits that may be had through a suitable choice of signs	352 353 s 354 354 355
§. §. Ch §. §. §.	638.* 639. apter 1 Own U 640.* 641.* 642.*	Survey of the most important benefits that may be had through a suitable choice of signs	352 353 s 354 354
§. §. Ch §. §. §.	638.* 639. apter 1 Own U 640.* 641.*	Survey of the most important benefits that may be had through a suitable choice of signs	352 353 s 354 354 355
§. §. Ch §. §. §.	638.* 639. apter 1 Own U 640.* 641.* 642.*	Survey of the most important benefits that may be had through a suitable choice of signs	352 353 s 354 355 356
§. §. Ch §. §. §. §.	638.* 639. apter 1 Own U 640.* 641.* 642.* 643.	Survey of the most important benefits that may be had through a suitable choice of signs	352 353 s 354 354 355
§. §. Ch §. §. §. §.	638.* 639. apter 1 Own U 640.* 641.* 642.*	Survey of the most important benefits that may be had through a suitable choice of signs	352 353 354 354 355 356 357
§. §. Ch §. §. §. §. §. §.	638.* 639. apter 1 Own U 640.* 641.* 642.* 643. 644.	Survey of the most important benefits that may be had through a suitable choice of signs	352 353 s 354 355 356 357 358
§. §. Ch §. §. §. §. §. §. §. §. §.	638.* 639. apter 1 Own U 640.* 641.* 642.* 643. 644. 645.	Survey of the most important benefits that may be had through a suitable choice of signs	352 353 354 354 355 356 357
§. §. Ch §. §. §. §. §. §. §. §. §.	638.* 639. apter 1 Own U 640.* 641.* 642.* 643. 644.	Survey of the most important benefits that may be had through a suitable choice of signs	352 353 s 354 355 356 357 358
\$. \$. Ch \$. \$. \$. \$. \$. \$. \$. \$. \$. \$.	638.* 639. apter 1 Own U 640.* 641.* 642.* 643. 644. 645.	Survey of the most important benefits that may be had through a suitable choice of signs	352 353 354 354 355 356 357 358 360

§. 648.	Whether and in what manner we should recommend a spe- cial name for our book to our readers	361
Chapter 2	2: On the Signs Used in a Treatise	363
Section 1:	General rules	363
§. 649.*	General attributes of the signs used in a treatise; they must	
	be 1) written signs	363
§. 650.*	2) They should not be difficult or costly to produce	364
§. 651.*	3) In addition, they should promise a certain longevity	364
§. 652.*	4) They should be easily recognisable	365
§. 653.	5) A precise connection between the sign in the designated	
	idea should either exist or be easily established	366
§. 654.	6) They should not give rise to any detrimental secondary	
	ideas	366
§. 655.	7) A sign should never have two easily confused meanings	367
§. 656.	8) One should never connect signs which are too similar	
	with different ideas	368
§. 657.	9) The signs in the treatise must also inform us about the	
	order in which they should be considered	368
§. 658.	10) Further highly commendable attributes	369
§. 659.	Do we sometimes require several signs for one idea?	371
§. 660.	To what extent should we follow previous authors in our	
	written presentation in a treatise?	372
§. 661.	To what extent should we avoid using terms of art in a trea-	
	tise?	372
§. 662.	As far as possible, we should express our thoughts using	
	signs that are already known to our readers, taken in senses	
	they already know	373
§. 663.	How we should use ambiguous signs	373
§. 664.	When it is permissible to depart from customary modes of	
	designation	374
§. 665.	When an additional meaning may be allotted to a sign our	
	readers already know	374
§. 666.*	How we should proceed in devising new signs	376
§. 667.	Among several interchangeable ideas, which one especially	
8 ((0 t	deserves to be designated?	378
§. 668.*	How to ensure that readers learn the sense of our signs	380
§. 669.	Mistakes in this business	386

-

ş. 070.	Our choice of designations must often be accompanied by	
8 (71	a special justification	389
§. 671.	How may we ensure that the connection between a sign and	
	the idea it designates is sufficiently intimate?	391
§. 672.	The signs towards which we direct the reader's attention	
	should insofar as possible already be known	392
§. 673.	Which language should one write in?	392
§. 674.	How to choose among several individual signs	394
§. 675.	Spatial relations between signs	395
§. 676.	How we must strive to achieve other aims through designa-	
	tion in addition to understanding	396
§. 677.	Some features of designations due to the customary form of	
	printed books	397
Section 2.	Special theses	397
Section 2.	Special meses	391
§. 678.*	Peculiarities of written presentation which stem from the	
	relations of a proposition to our science	397
§. 679.	Written presentation of principles	398
§. 680.	Written presentation of comparisons and contrasts	399
§. 681.	Written presentation of determinative propositions	399
§. 682.	Written presentation of descriptions	400
§. 683.*	Written presentation of proofs	400
§. 684.	Mistakes in the written presentation of proofs	404
§. 685.	Written presentation of objections and replies	405
§. 686.	Written presentation of examples	405
§. 687.*	Written presentation of considerations of propositions and	
	mere ideas; in particular: a) Definitions	405
§. 688.	b) Comparisons and contrasts between propositions and mere	
	ideas	407
§. 689.	c) Classifications	407
§. 690.	d) Indicating objective grounds	408
§. 691.	Written presentation of the divisions of a book	408
§. 692.	Written presentation of questions and answers	409
§. 693.	Written presentation of reviews and surveys	409
§. 694.	Written presentation of fiction in a treatise	410
§. 695.	Written presentation of information about the author	411
§. 696.	Written presentation of the title	411
§. 697.	The most common mistakes in written presentation in trea-	
	tises	412

§.	698.	Other treatments of this subject	414		
Par	rt VIII:	How the Author of a Treatise Should Behave	420		
§.	699.*	Contents and necessity of this part	420		
§.	700.*	Morality also has its place in the composition of a treatise .	420		
§.	701.*	All the rules prescribed by the art of discovery must also be			
		followed here	421		
§.	702.*	What must be done before one begins to write the book	422		
§.	703.*	Note taking	423		
§.	704.*	The order in which one should work on the individual parts			
		of the book	424		
•	705.*	Examination of the individual features of the book	426		
§.	706.*	Parts of the book which are related to one another	427		
•	707.*	Consulting one's predecessors	428		
-	708.*	The special care that verbal expression in a treatise merits .	429		
	709.*	Making use of the judgements of others	430		
	710.*	Finishing the work. Publication	431		
§.	711.*	The most common mistakes in this business	433		
Pa	Part IX: On Scientific Books that are not Genuine Treatises				
8.	712.	Contents of this part and its connection with the foregoing	436		
	713.	On essays	437		
•	714.	On texts for use in oral instruction	442		
§.	715.	On handbooks	444		
§.	716.	On scientific entertainments	445		
Ар	Appendix				
8	717.	A glance at previous arrangements of the Theory of Science			
3.	/1/.	Proper	447		
8.	718.	The dialectical method	454		
0.					
Bo	Bolzano's Index		462		
Bił	Bibliography				
Inc	Index of Names				
Ind	Index of Subjects				