

Intelligence, Information, Thinking

By [Edward de Bono](#)

[A brief celebration of Edward de Bono's ideas on thinking](#)

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34 The wide margins on the right of the page are intended for thinking notes.

35 The line numbers on the left of the page may used for cross-linking notes.

36 INTELLIGENCE

37 Intelligence is like the horsepower of a car.

38 Thinking is like the skill with which the car is driven.

39 Information is like the road map available to the driver.

40 Recently a taxi driver told me that his brother was an excellent fighter pilot but a very bad car driver.

41 The fighter pilot was excellent in control of his plane in a clear sky.

42 This was a matter of control.

43 With a car driver the control is only one aspect.

44 The behavior of other drivers on the road is very important.

45 The nature of the road itself is very important.

46 It can be the same with intelligent people.

47 We could define 'intelligence' as 'the ability to do well at IQ tests'.

48 If the performance on IQ tests does actually correlate with performance as an accountant or scientist then the IQ tests are a valid predictor for those fields.

49 The difficulty arises when the 'intelligence' part of the 'Intelligence Quotient' (IQ test) is taken as meaning the general use of the word 'intelligent'.

50 The original use of the IQ tests was a very valid one.

51 The intention was to see how an individual child compared to the average for that age and background.

52 Those children who were obviously below the average needed special attention.

53 The children who were below average might have been so because of an impaired mental capacity or because of their social background and a lack of stimulation at home.

54 'Culture free' tests were designed to try to remove the social effects.

- 55 There can be no doubt that IQ tests do measure a type of intelligence but is this the same as the general-purpose intelligence used in daily life?
- 56 There is evidence that IQ tests correlate well with the speed of transmission along the neurons in the brain.
- 57 This itself is determined by enzyme kinetics.
- 58 There is endless argument about the relative contributions of genes and nurture to traditional IQ results.

59 ***The Intelligence Trap***

- 60 There are some aspects of a high intelligence that become a sort of trap.
- 61 A person with a high intelligence can take a position on a subject and then use their intelligence to defend that position very ably.
- 62 The better the defense of that position the less does that person see any need to consider alternatives or listen to others.
- 63 That is not good thinking.
- 64 Someone who has grown up with the realization that he or she is more intelligent than most people around wants to get the best reward for being so intelligent.
- 65 The quickest and best reward is to prove other people wrong.
- 66 This is a risk-free demonstration of superiority.
- 67 It is also relatively easy.
- 68 An intelligent person takes in information quickly and can reach a conclusion in a short time.
- 69 A less intelligent person has to wait to take in more information and may, occasionally, reach a better conclusion.
- 70 This is all like the driver of a fast motor car getting into bad driving habits.

71 ***Pieces of the Puzzle***

72 A person is sitting down at a table with all the pieces of a puzzle on the table before him.

73 The task is to complete the puzzle.

74 The intelligent person may complete that puzzle rather quickly.

75 When all the pieces of the puzzle are given there is a skill in seeing how they fit together.

76 But in **most situations** the pieces of the puzzle are not given.



77

78 **You** have to **find** and **select** the **pieces**.

79 Most situations are **open-ended** not closed-ended.

80 The intelligence

81 needed to **find** and **select** the pieces

82 is not the same

83 as the intelligence needed

84 to put

85 pre-selected pieces

86 together.

87 **Intelligence may be very good at**

88 **'understanding' things**

89 **but is not necessarily so good**

90 **at 'designing' or 'doing' things.**

91 **Different skills**

92 **are needed**

93 **for the different situations.**

94 ***Intelligence as Potential***

95 Like the engine of a motor car, intelligence is a potential.

96 There may be a fast car with rather a bad driver.

97 There may be a more humble car with a better driver.

98 The danger lies solely in believing that IQ-tested intelligence is enough and that it carries with it **the needed thinking skills**.

99 This conclusion is easy to reach in school where many of the tasks are very similar to those given in IQ tests.

100 The real world may, however, be different.

101 Another danger is even more serious.

102 This is the belief that those with a low performance on IQ tests cannot be good thinkers.

103 This belief gives rise to a **huge wastage of talent**.

104 Given the right 'thinking tools' even those of relatively low IQ intelligence can do very well indeed, as we shall see later.

105 Less intelligent youngsters may not fully understand the 'game' that is expected of them at school, so they do poorly.

106 On a youngster's first day at school someone should sit that youngster down and tell him or her that the 'game' at school is to 'guess what the teacher wants'.

107 With this simple clarification everyone would do much better at school – especially the poor performers.

108 ***Develop Potential***

109 We need to acknowledge the importance of intelligence as a 'potential' and then we need to seek to develop that potential.

110 This may involve the **deliberate and direct teaching of thinking skills**.

111 There is a danger that such skills get taught only to the less intelligent, who are seen to benefit so greatly from such skills.

112 It is a mistake to assume that intelligent people are necessarily
good thinkers.

113 INFORMATION

114 Thinking is never a substitute for information.

115 [The World: A Brief Introduction](#)

116 *The Second Curve* – [missing the turn to the future](#)

117 [Why Peter Drucker Distrusted Facts](#)

118 [The Forces Creating a New Geography of Opportunity](#)

119 We need all the information we can get.



120

121 [Assumptions](#)

122 [Knowledge and Technology](#)

123 Two thousand years ago China was far ahead of the rest of the
world in science and technology.

124 They had gunpowder, rockets and many other things long before
the rest of the world.

125 Had China continued at the same rate of progress it would easily
be the dominant power in the world today.

126 But it did not continue.

127 Progress came to a dead end.

128 Why?

129 The scholars started to believe that they could move from
certainty (fact) to certainty without any need for the messiness of
'possibility'.

130 So they never developed the **possibility system**: hypothesis, speculation, imagination, etc.

131 Progress came to a dead end.

132 Exactly the same thing is happening today in the West.

133 **Because of the excellence of our computers we are starting to believe that all you need to do is to collect and collate information.**

134 That information will do your **thinking for you.**

135 That information will **make your decisions, design your strategy and indicate the way forward.**

136 This is much more dangerous than most people realize.

137 **Thinking is needed** to interpret the information in different ways.

138 **Thinking is needed** to put information together to design value.

139 **Thinking is needed** to see where to get more information.

140 Thinking is not a substitute for information but information is not a substitute for thinking.

141 ***Search Not Think***

142 Youngsters given computers and Internet connections have a huge world opened up for them.

143 This is a great privilege.

144 There is a danger, however, that youngsters start to believe that you do not need to think.

145 All you need to do is to 'search' and somewhere you will find that answer.

146 This is a difficult point.

- 147 Everyone does not need to re-invent the wheel for him and herself.
- 148 **There is much useful information available that can save a lot of thinking.**
- 149 What is important is that as we **develop the search abilities** we should at the same time develop the 'thinking' abilities.
- 150 The combination of thinking and information is most powerful.

151 ***School and Information***

- 152 **A large part of school** is taken up with information.
- 153 This is for two very practical reasons and two less so.
- 154 The first practical reason is that there is a lot of information around.
- 155 It is there and it is relatively easy to teach.
- 156 So as school is a sort of 'baby-sitting' exercise the information fills up time.
- 157 The pupils are busy.
- 158 The teacher is busy.
- 159 The parents are happy.
- 160 The second practical reason is that information is easy to test.
- 161 Does the pupil remember the information he or she is supposed to know?
- 162 Marks and grades can be given.
- 163 These are believed to be good motivators to get the pupils to work harder – directly or through the parents.

- 164 The third reason is that the information is there and has always been taught traditionally.
- 165 In the UK children leave school knowing the names of most of Henry VIII's wives and even the date of the Treaty of Utrecht.
- 166 Yet they **have no ideas** how the corner shop works or how value is created in society.
- 167 The fourth reason is the unfortunate belief that teaching information is a way of teaching thinking.
- 168 This is a dangerous mistake since it blocks the direct teaching of thinking as a skill.
- 169 Certain skills of presentation and argument may accompany the teaching of information but these are only a **very tiny part** of practical real-life thinking.

170 ***Necessary but not Enough***

- 171 If a chef spends so much time making elaborate pastries that he has no time to make a decent sauce that does not mean that the pastries are bad or even a waste of time.
- 172 It simply means that time must be made available for the sauces.
- 173 There is no substitute for information.
- 174 We need as much as we can get.

175 **But we need thinking as well.**

176 **The skill of thinking does not arise from teaching more and more information.**

177 **Unless you can teach**
178 **the right answer**
179 **to every conceivable situation,**
180 **then the skill of thinking**
181 **is needed.**

182 [How can the individual survive?](#)

183 The memo THEY don't want you to SEE [because](#) ...

184 **THINKING**

185 Thinking is the most fundamental of all human abilities.

186 The quality of our future will depend directly on the quality of our thinking.

187 There are few who would challenge the importance of 'thinking'.

188 So why do we not teach thinking explicitly and directly in our schools?

189 There are a number of possible reasons, which are listed below.

190 There may be others not included here.

191 I am aware that there are several schools which do now teach thinking explicitly.

192 There are even whole countries, like Venezuela, where it is on the curriculum.

193 **By and large, however, most schools do not teach thinking explicitly.**

194 **The reasons below are not** given in order of importance or even probability.

195 **1. Thinking is not necessary.**

196 You are taught what to do in any situation and then you do what

you should do.

197 This is like workers on an assembly line.

198 They do what they are expected to do.

199 While this approach has some merit, it would be impossible to teach all situations and varieties of situations.

200 **In a changing world this is even more impossible.**

201 **2. Information is enough.**

202 God cannot think because God has complete information outside of time and cannot move from one thought to a better one.

203 So if we teach information and also how to get information (from the Internet, etc.) then the need for thinking is much reduced.

204 Information without thinking is not enough.

205 We need information

206 but we also need thinking

207 to [see](#)

208 how to assess the information,

209 how to use it

210 and what further information might help.

211 **3. We already [teach](#) thinking.**

212 Because it seems so inconceivable that schools do not teach thinking, there is a claim that they do.

213 This claim is valid – up to a point.

214 Some aspects of thinking are indeed taught.

215 This includes the sorting of information, some analysis and the presentation of arguments.

216 This is all very valuable but is **only a small part of the thinking needed** in real life.

217 When my work was being used in Bulgaria they asked a nine-year-old girl from Plovdiv if she used the 'thinking tools' in real life.

218 She replied:

219 'I use them all the time in real life.

220 I even use them outside life – in school.'

221 John Edwards in Australia was teaching science to his pupils.

222 He decided to teach less science and some thinking instead.

223 His students did much better in their science exams than they had ever done.

224 In Argentina a school using my methods did so well in the national exams that they were investigated for cheating.

225 Their results were so far out of line with the results of other schools.

226 I would not deny that schools do teach some thinking but I would suggest that it can be taught more powerfully and much more broadly than in the context of information skills.

227 **4. Thinking cannot be taught.**

228 This is probably the main reason.

229 There is the **innocent ignorance of teachers** who simply do not know how thinking can be taught.

230 Their **teacher training colleges** did not teach them how to teach thinking so they do not know that it can be done.

231 There is the dogmatic ignorance of those pundits who take the rigid position that thinking is a matter of inborn intelligence and cannot be taught.

232 This last view is simply absurd nonsense as the results of teaching thinking have become obvious.

233 "For almost nothing
in our educational systems
prepares people
for the reality
in which they will
live, work,
and become effective"
– [Druckerism](#)

234 ***Our Software for Thinking***

235 Around the world there are thousands of people writing software for computers.

236 How much effort have we made to write software for the human mind?

237 The answer is that, outside of mathematics, we have made no effort at all for about 2,400 years.

238 Why?

239 Because the excellence of the software designed by the GG3 (Greek Gang of Three) has seemed so perfect that there was no need for new software.

240 Socrates was trained as a Sophist.

241 He was concerned with dialectic or argument.

242 Plato was influenced by the mathematician Pythagoras and he believed that just as there were ultimate truths in mathematics so there should be ultimate truths everywhere.

243 Aristotle introduced his 'box logic'.

244 Define some categories or classifications.

245 Then you judged whether something was in this box or not in the box (it could not be halfway or anywhere else).

246 Then you knew all about that thing from the label on the box.

247 During the Renaissance Greek thinking (GG3) came into Europe through the Arabs in Spain.

248 The people running schools and universities in Europe were largely Church people.

249 They were not interested in:

250 **Perceptual thinking:** because all the starting perceptions in theology were pre-determined.

251 **Creative thinking:** because there was no need and it could be dangerous.

252 **Constructive thinking:** because the operations of the Church were structured and strategic thinking was only for the top level.

253 **Operational thinking:** because that was not what the Church was about.

254 The interest of those Church thinkers was in logic, truth and argument.

255 These were needed to prove heretics wrong.

256 That was the basis for thinking in education and it has continued so, through tradition, to this day.

257 It is a very difficult continuity to break because any advisors come from within the tradition and so defend it.

258 ***Perceptual Thinking***

259 This is a very, very important part of thinking – and almost completely neglected.

260 No matter how good our logic may be the end result will depend on the starting perceptions.

261 If these perceptions are false and inadequate the answer will be rubbish – even if the logic is impeccable.

262 Gödel's theorem shows how from within a system, logic can never prove the starting points.

- 263 The starting point is perception.
- 264 The CoRT program (Cognitive Research Trust), now widely used in schools, is all about improving perception.
- 265 This sort of thinking, taught by the Hoist Group in the UK to participants on the government New Deal program for unemployed youngsters, increased the employment rate five hundred per cent.
- 266 A year later ninety-six per cent were still in employment.
- 267 The 'thinking' was only taught for five hours.
- 268 This sort of thinking was taught by David Lane, the principal of the Hungerford Guidance Centre in London (for youngsters too violent to be taught in normal schools), to the violent youngsters.
- 269 In a twenty-year follow-up he showed that the rate of actual criminal conviction for those taught thinking was only one tenth of the rate for those not taught thinking.
- 270 In the Karee platinum mine in South Africa there used to be two hundred and ten fights every month between the seven tribes working there.
- 271 Susan Mackie and Donald Dawson taught this thinking to the totally illiterate miners who had never been to school even for one day in their lives.
- 272 The fights dropped from two hundred and ten to just four.
- 273 I use these examples ↑ because [most people believe that bad behavior depends on emotions and man's basic instincts](#), and that these cannot be touched by any amount of thinking.
- 274 This is simply not true.
- 275 Logic will never touch emotions but perceptual thinking will.
- 276 **If you see things in a different way** your **reaction is different.**

277 What was taught to all the people in the above examples was
direct thinking **not** morals or attitudes or values.

278 Research by David Perkins at Harvard University confirms the
importance of perception.

279 He showed that ninety per cent of the errors in thinking are errors
of perception.

280 Logic accounts for a minor ten per cent.

281 Yet we continue to believe, as we have done for centuries, that
thinking is all about logic.

282 As I mentioned earlier in the book, some people are very good at
solving a puzzle if all the pieces are put out in front of them.

283 But that is not practical in real life.

284 It is **perception** that chooses and
decides on the pieces.

285 No amount of excellence in logic will make up for a deficit in
perception.

286 ***Critical Thinking***

287 This is a useful part of thinking.

288 But it is only part of thinking.

289 Our traditional (GG3) thinking is all about analyzing a situation
and identifying standard elements.

290 Then we provide the standard answer to these standard elements.

291 So Ben S. Bernanke in Washington (head of the Federal Reserve
Bank) looks at the economic situation.

- 292 If he recognize inflation the standard response is to raise interest rates.
- 293 If he recognize recession then the standard response is to lower interest rates.
- 294 There are serious flaws in the thinking – but it is traditional.
- 295 The word 'critical' comes from the Greek word, 'kritikos', for judge.
- 296 It is [judgement](#) thinking.
- 297 Is this right or wrong?
- 298 Does this fit in this box or does it not?
- 299 Is this consistent with what went before, or not? Etc.
- 300 I want to emphasize again that this is a valuable part of thinking but by no means enough.
- 301 What is left out is:
- 302 Creative thinking
 - 303 Perceptual thinking
 - 304 Design thinking
 - 305 Operational thinking
 - 306 Exploratory thinking, etc.

307 ***Attitudes and Tools***

- 308 Attitudes are very weak and do not transfer.
- 309 Attitudes are like itineraries set up by a travel agent.
- 310 You use them but they [do not lodge in your mind](#).
- 311 A tool is a specific mental operation.
- 312 The OPV tool in the CoRT program reminds the thinker to consider **the thinking of the other party** (for example in a fight).
- 313 OPV stands for 'Other People's View'.

- 314 Because it is an **acronym** it has a **place in the brain**.
- 315 This is just like the names of vegetables, which also have a place in the brain.
- 316 You do not ask for 'a shiny, round red vegetable which is good for salads'.
- 317 You ask for 'a tomato'.
- 318 The **acronyms** are an important part of the '**tool approach**'.
- 319 There have been schools where one teacher used the acronyms but another teacher disdained the 'phony acronyms' and tried to teach attitudes.
- 320 It did not work.
- 321 The second teacher quickly came back to using the acronyms.

322 That is the way the brain works.

323 ***Creativity***

- 324 While aesthetic judgement may play a key part in the art world, there is no mystique or magic about '**idea creativity**'.
- 325 **Idea creativity** is a **mental skill** that can be taught and practiced as formally as mathematics.
- 326 This is what lateral thinking is about.
- 327 The brain works as a **self-organizing information system**.
- 328 **Such systems make patterns**.
- 329 Patterning systems are **always asymmetric** (the path from A to B is not the same as the path from B to A).
- 330 Both humor and creativity depend on this **asymmetry**.
- 331 The formal techniques of lateral thinking (challenge, concept extraction, concept fan, provocation, random entry, etc.) can all be learned, practiced and used deliberately.
- 332 One afternoon Caroline Ferguson in South Africa set up a group

of workshops for the steel company ISCOR.

333 Using just one of the formal tools of lateral thinking the groups generated 21,000 new ideas.

334 It took nine-months just to sort through the ideas.

335 This goes far beyond inspiration or brainstorming.

336 **Argument**

337 We have the tradition of argument designed by the GG3.

338 We use the method in **parliament** and in the **courts of law**.

339 It is an extremely primitive, crude and inefficient way of **exploring a subject** (if this is the need).

340 In a court of law if the prosecuting lawyer thinks of a point that would help the defense case, is that lawyer going to raise that point?

341 Of course not.

342 If the defense lawyer thinks of a point that would help the prosecution, is the defense lawyer going to raise that point?

343 Of course not.

344 The process is one of '**case-making**', not of exploring the subject.

345 In argument you must start with a position'– otherwise you cannot argue.

346 In exploration, you explore first and reach a position at the end of the exploration.

347 In argument there is **no design effort**.

348 You are arguing A against not – A or against B.

349 There is **no energy going** into designing the possibility of C, D or E.

350 Argument is about egos, emotions, attack, defend, win, lose, etc.

351 ***Parallel Thinking***

352 **An alternative to argument** is now becoming widely used around the world.

353 [Attention directing framework](#)

354 It is used in the primitive highlands of Papua New Guinea and in the top economic discussions in Washington.

355 It is used by four-year-olds in schools and by top executives in many of the world's best-known corporations.

356 A company in Finland used to spend thirty days on their multi-national project discussions.

357 Using the [Six Hats](#) **method** they now do it in two days.

358 Juries in the USA are being taught the method and are reaching unanimous decisions very quickly.

359 MDC, a corporation in Canada, did a careful costing and showed that in the first year they used the Six Hats they saved \$20 million.

360 People are beginning to realize that while argument has its place, it is a **very poor way of exploring a subject.**

361 The [Six Hats](#) method is being used more and more because **it gets the best thinking from all those present.**

362 Under the **White Hat** **everyone** focuses on **information.**

- 363 What do we have?
364 What do we need?
365 How are we going to get the information we need?

366 Under the **Red Hat** everyone is allowed to express their **emotions, intuitions** and **feelings** of the moment.

367 Under the **Black Hat** everyone focuses on the **dangers, problems, weaknesses** and **downsides** of an idea, and also on any **faults in logic or thinking**.

368 Under the **Yellow Hat** everyone **looks for benefits** and **values** and **how the idea could be made to happen**.

369 Under the **Green Hat** everyone **looks for new ideas, further alternatives and possibilities**.

370 Under this hat everyone is expected to make a creative effort – or keep quiet.

371 **People do not like keeping quiet** so they make a creative effort – and often surprise themselves.

372 The **Blue Hat** is the **organizing** hat.

373 This hat **determines** the **focus** and the **desired outcome**.

374 This hat **sets** the **sequence** of use of the hats and also the **discipline** of use.

375 This hat **puts together** the **outcome** and **decides the next step** in the thinking.

376 **Range**

377 I have taught thinking to four-year-olds and to ninety-year-olds (at Roosevelt University).

378 I have taught thinking to Down syndrome youngsters and to Nobel Prize winners.

379 I have taught thinking to illiterate miners in South Africa and to top executives at some of the world's largest corporations: IBM, Shell, NTT, Nokia, etc.

380 I have taught thinking to cricket teams and to orchestras.

381 **Love It**

382 Children love thinking.

383 They love the opportunity to use their minds and to come up with new ideas.

384 In one school the main punishment for bad behavior was that you would not be allowed to go to the thinking lessons.

385 For a youngster every idea is an achievement – and an opportunity to show off.

386 Again and again children choose 'thinking' as their favorite subject.

387 Edward de Bono's [Textbook of Wisdom](#)

388 de Bono [book topics](#)

389 [Naming people behaviors](#) – someone important to your life may be observing you

390 The importance of [effectiveness](#)

391 [Who is an executive?](#)

392 [The World: A Brief Introduction](#)

393 [The Second Curve](#)

394 [Managing oneself](#) – a
revolution in human affairs

395 The [memo](#) THEY don't want you
to SEE ↓

396 Intelligence, information, thinking
in a [much broader context](#) ↑ ...

397 [Financial survival](#)

398 Essential awareness
provides an ecological foundation