Report
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Charlie Munger's Mental Models

"How do you spend your days and what do you do during working hours?" was the question posed by a Berkshire Hathaway shareholder to CEO Warren Buffett in one of his famous Omaha meetings.

"I read reports and talk on the phone. That's basically it. And you, Charlie, what do you do?" answered Buffett with a fleeting smile, transferring the question to his principal partner.

"Well, that question reminds me very much of a friend of mine who, in World War II, belonged to a regiment where the soldiers had nothing to do. A general once went up to my friend's boss, we'll call him Captain Glotz. He said, 'Captain Glotz, what do you do ?' His boss said, 'Not a damn thing'. The general got madder and madder and turned to my friend and said, 'What do you do?' My friend said, 'I help Captain Glotz'. That's the best way I can describe what I do at Berkshire Hathaway."[1]

This is just one of the countless and improbable stories that this admirable pair of investors tells when talking to their shareholders. Charlie Munger's modesty is obviously exaggerated but, nevertheless, where there's smoke there's fire. If Buffett is reckoned to be Berkshire Hathaway's great operator and source of practical wisdom, laterally, Charlie Munger seems to be the more conceptual and intellectually refined matrix of this amazing supply of inspired investment decisions. And this is in the context of the US market, where competition never sleeps.

Buffett's popularity attracts the curiosity of nearly all analysts who attempt to understand (in order to successfully imitate) how he does what he does. The triviality and simplicity of the justifications (usually after the fact) of his criteria for buying and sell stocks, the ease with which he explains his methods for selecting and maintaining his investments, the quirky humor of his quotes, and the utter charm of someone who always seems to be having fun at work assure Buffett his position as the center of attention. A huge range of Buffettian philosophy books and academic studies have been published. But, perhaps the best path for getting to the roots of Berkshire Hathaway's performance is probably

(1) *Quoted from Janet Lowe, "Damn Right! Behind the Scenes with Berkshire Hathaway Billionaire Charlie Munger". John Wiley & Sons, Inc., p. 232.*

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Our Performance

Over the last quarter, shares of Dynamo Cougar appreciated 9.0% in Reais (27.3% in US dollars), bringing the year-to-date return to 8.1% in Reais (33.0% in US dollars). This compares with *Ibovespa's* 15.1% and *FGV-100's* 17.5%, both figures in Reais. Since it started up operations on September 1, 1993, Dynamo Cougar has appreciated by 1,202% in US dollars, or the equivalent of 29.8% *per annum*.

During this last semester, the Brazilian currency appreciated significantly against the US dollar (by 18.7%, to be precise). Hence, it is no surprise that shares of companies that had high level of dollar denominated debt and/or that sell non-tradable products were the best performers so far in 2003. Generally speaking, shares of export-driven companies had a relatively weak performance during the same period. In this short term context, given the concentration of our portfolio on companies of the latter category, the return of Dynamo Cougar for the semester was satisfactory.

All signs seem to indicate that Brazil's economic activity is at the year's lowest point. In fact, some companies have been taken by surprise by the steep drop in sales. Even low-value products have shown a decrease in sales volumes as compared with last year, something that has not occurred for a long time. For example, in the year up to May, the volume of chicken meat sold in the domestic market had dropped by close to 8% compared with the same period last year. It would seem that only export companies have succeeded in maintaining a low level of idle capacity.

Nevertheless, there seems to a certain consensus that the inevitable decrease in interest rates will be at least sufficient to revert this trend. As always, the size of the reduction of interest rates and the vigor of the country's consequent economic recovery continue to be the variables most difficult to predict. Judging from recent stock market performance, investors seem to be more optimistic than companies, which is not unusual in this kind of situation. But this difference in perspective does not weigh heavily in favor of any specific outcome.

If we look a little beyond 2003, visibility from the point of view of economic activity is even further reduced. We are all positively surprised by the new government's macroeconomic competence, but the management of the micro-economy has left much to be desired, and it is all but impossible to foresee the impact of this inefficiency on the growth of the economy.

In summary, as we have said previously, the PT government broadens the spectrum of potential economic scenarios. It could well be that reforms will be consistent, interest rates will fall, the exchange rate will recover competitiveness, the economy will accelerate, and investments will return. This is scenario with a good probability of happening. Alas, the other side of this coin is that we cannot dismiss the likelihood of an outcome where only the possible (and insufficient) reforms will be approved, the government will be unable to reduce interest rates at the desired speed, exchange rates will remain at present levels, and economic activity will rise meagerly from the current lows, without really taking off.

In more volatile environments, investors tend to assign more value to companies generating higher volumes of free cash flow - which can be used to reduce debt or to pay out dividends - , than to companies with major investment programs. This trend became evident throughout the semester when shares of some companies that announced a reduction of their investment programs went up significantly. Similarly, shares with high dividend yield also performed well. The level of skepticism grew or, in other words, both the discount rate for new investments and the preference for liquidity increased.

Historically, at Dynamo, we have had a preference to invest in companies with high return on equity, good operating margins, and a rigid discipline of capital. When well managed, this type of companies tend to generate a robust free cash flow. Over the last few years, since there were hardly any competitive threats and no stimulus from the economy, companies invested little and accumulated cash which, in a high interest rate scenario, has been very positive.

Increasingly, we have been paying more attention to multiples of free cash flow as opposed to the much more popular *Ev/Ebitda* (enterprise value, i.e., market capitalization plus net debt, divided by earnings before interest, taxes, depreciation, and amortization). For companies with high free cash flow, this last multiple will necessarily decrease overtime as the numerator is reduced. In the case of companies that use this cash generation for new investments, this multiple will only be reduced if the future increase of the denominator, i.e., the *Ebitda* is compatible with the level of investment, which is less certain. In this context, except in some specific cases, we continue to prefer the more prudent companies.

to follow the trail left by Munger in his infrequent and somewhat fragmented statements. A discreet and laconic man, the older Berkshire Hathaway partner is an investor we like to monitor as closely as possible.

Charlie Munger is a thinker, an organizer of ideas about the gears that govern a company. This is no little thing. In the stock market, it is far easier to describe oneself as a value-fundamentalist investor than to explain (or, occasionally, understand) exactly what this means.

The capital of a corporation is represented by shares that entitle its owners to a portion of the companies' results as well as assets. Most of the time, the value of the assets can be determined with a fair degree of certainty. But the future results generated by these assets can only be estimated based on assumptions and models that seek to project what will happen to the company over the next few years. The price fluctuation of a share in the market reflects different methods of building or calculating such estimates.

When we refer to the value fundamentals of a company, we are implicitly ignoring short-term fluctuations (usually, these are accidental) in the formation of the share price. In fact, this distinction is one of the ways generally used to classify different types of investors: the fundamentalists are guided by the more structural features of companies to understand their values. Those that attempt to monitor only the short term events that affect share prices are the market timers. Then there are the chartists, whose interest is in the behavior of long term share price data, to which they attribute statistical properties that can be tamed and, occasionally, even their own mathematical laws. Naturally, although this quick classification does not exhaust the taxonomy of investors, it does, at least, illustrate the more common market types.

People whose work is based on the fundamentals are generally guided by longer-term strategies. Their forecasts cover a longer range (or should), and disregard external factors that may affect the value of a share independently of what is going on inside the companies. Even the so-called non-operating factors that momentarily impact a company's balance sheet are looked at with some reserve. What is important is to constantly revisit and check the premises on which the analyzed companies' future was predicted. For this very reason, these particular investment portfolios tend to be less volatile and their performances should only be analyzed over longer periods of time. Investments made with this type of approach should yield reasonably high (although not the highest in the market) and consistent. With such returns, one can enjoy the substantial benefits of compounded gains over the long periods of time. Berkshire-Hathaway, unquestionably the international paradigm of the fundamentalist investor, takes pride in stating in its acclaimed annual reports that anyone who invested US$19 in 1964 now has approximately US$ 41,000. This represents an annual rate of return of close to 22.2% over 38 years![2] This does not sound like an impressively high return, especially when compared with each year's market champions. The amazing creation of long term value only unleashes the invisible power of continuously compounded gains over extensive periods of time, even at moderate rates.

We at Dynamo, have made considerable efforts to subordinate our thinking along the lines of fundamentalist analysis. The economic environment in Brazil is also less stable than in more developed countries, a factor that further complicates the process of valuation. There are also the difficulties involved in how results are distributed amongst the various shareholders, a topic which is more pertinent to the theme of corporate governance and which is not the subject of this Report. All things considered, we believe that the results of our funds have confirmed that it is feasible to invest in the Brazilian stock market with an approach that puts less emphasis in guessing short-term movements and places more importance on the relationship between the price-value of stocks and the results of the companies.

If the raw material for market timers is timely information and for chartists, the econometrics of temporal series, for the fundamentalist the main task is to correctly decipher the present and future of the companies they have chosen to invest. In other words, the issue is how to pinpoint what is truly relevant in a maze of qualitative and quantitative relations in and about potential investee companies. It is always advisable to consult executives, controllers, suppliers, clients, competitors and any other parties with some connection with the company under analysis. This requires a degree of interdisciplinary jugglery that involves a number of different skills ranging from very specific accounting knowledge to some basic laws of other sciences, and passing through macro and microeconomic problems.

Another basic prerequisite is to constantly monitor what is actually happening in companies. Sounds simple, but it is not. Interpreting information coming from a wide range of sources, all of which with some interest in the company though not always aligned with the interests of the shareholders, is a patient game of intricate investigation and comparisons. Companies often disclose their "truths" with the subtlety of St. Athanasius. The story goes that, on one occasion, the Saint was fleeing from his persecutors when one of them caught up with him. Mistaking him for just a passerby, the pursuer asked St. Athanasius if perhaps he had seen an escaping traitor (i.e., the saint himself). Incapable of actually lying, even to save his life, the Saint simply replied "Yes, and not far from here". We frequently get the impression that certain reports and balance sheets are drawn up in the most faithful Athanasian tradition.

Rare though as this may be, a combination of philosophical wisdom and investor acuity can be opportune. For many years now, Bernard Williams is an American philosopher who has been investigating the concept of truth for a long time. In his opinion, truth has two virtues[3]. The first one is precision which is the willingness to assure us that, in forming our opinions, we make the maximum effort to guarantee that we have the best evidence possible, that we examine it impartially and accurately, and that we are always prepared to accept counter-evidence if it arises. This principle is of inestimable value to the good fundamentalist analyst. The second virtue is the sincerity which applies to the communication between people since this is the expression of what the one truly believes, without quibbles. This is an essential virtue for collective investment decisions.

The group of value investors, as fundamentalists are also known, are rare birds in the Brazilian market, much more focused on market timing and short term investments. The group is relatively small even in more developed markets. Thus, it is not surprising that those few who make a name for themselves are watched with interest by the rest of the world. And this is where this unusual character enter the scene, Charlie Munger, 79, born in Omaha, Nebraska just like Warren Buffett (whose son, Howard Buffett, likes to say that his father is the second smartest man he knows – leaving no doubt as to the identity of the first)[4].

In Munger's opinion, fluency in all techniques of company analysis is a necessary condition for a good investment. Understanding accounting data, monitoring balance sheet development, studying the industry, knowing the company by-laws, examining its executive remuneration policy, projecting its business future, are all relevant as investment decision criteria. But they are far from being a sufficient basis for this decision as it is not parametric. The management of a company involves people. Equally, the plans of the competition are drawn up by people. People also define market regulations and decide what clients will purchase. Hence, far from being an exact science, to invest, to maintain the investment and to "disinvest" are choices immersed in multiple subjectivities. This is what Munger finds most interesting. And it is here, on this uneven terrain, that he can make a real difference.

The organization of data and information, the proposition of the best inferences and the more detailed analytical work demand huge efforts and accuracy but, nonetheless, belong to a more disciplined world of quantities and, thus, of logical reasoning. On the other hand, human action, its designs and unintentional consequences form another field of intelligence, one much closer to psychology than to exact sciences.

(2) *Berkshire Hathaway Inc., 2002 Report, p. 3*

(3) *For those interested, the reference is: Bernard Williams, Truth and Truthfulness: An Essay in Genealogy, Princeton University Press. Sadly, after this Report went to press we learned of his death.*

(4) *Roger Lowensein, Buffett: Making of an American Capitali, Random House, 1995, p. 162.*

We can divide the Munger approach into two main blocks. The first relates to the positive prescriptions for handling all parameters and variables present in the day-to-day life of a fundamentalist investor. In order to achieve that, Munger believes it is essential to build mental models which lead to the understanding of actual situations. These models are constructions of our intellectual and scientific history (more the latter than the former) of proven explanatory power over a variety of phenomena. And from these great theorems originate the corollaries of the so-called worldly wisdom so cherished by Munger (hence his admiration for this eighteenth century American Leonardo da Vinci, Benjamin Franklin). To be able to handle this worldly wisdom, an investor must have a general and interdisciplinary background – which Charlie Munger is very proud to have garnered - enabling him to access a plurality of models. Without this wisdom, we would be reduced to what Munger refers to as the hammer man syndrome, for whom every problem looks like a nail.

But, what are these models? From Mathematics come combinatory analysis, simple algebra and, most importantly, the theory of probability (a future value is always an expected value). "Very early on, I recognized that Mathematics are an essential part of the language required to understand what life is all about".[5] Munger's respect for the force of mathematical rigor takes him close to the edge of certain eccentricities typical of mathematicians. The disdain of mathematicians for "general laws" based on empiricism and not on logical deduction is well known. For this reason, they place computers in a much less important and more impure position than one would have thought. Mathematicians use to claim that they have the second cheapest department in any university since, in order to work, all they require is pencil, paper and a wastepaper basket. Which is the cheapest? The Philosophy department, which dispense the wastepaper basket. In one of his questions and answers sessions with shareholders during a Shareholder's Meeting, he was asked if he used a computer to verify economic trends and statistical series. With undisguised delight, Munger replied that he had never used a computer: "People tend to calculate too much and think too little".[6]

In Engineering schools, they created and applied the concepts of backup, feedback, and critical mass concepts, all of them extremely useful. There is no space in this Report to explore the relevance of such concepts for the field of investment theory. But we should bear in mind that engineers have a strong incentive towards the greatest possible accuracy in what they do, since the consequences of errors in this area can be catastrophic.

In Finance departments of leading US universities, circulates the "anti-model" (which works as a negative of the right thing) based on the assumption that markets are perfect. Munger believes that, on average, this idea is approximately correct. In any transaction some will gain and some will lose. Consistent gains in the market are only feasible if opportunity "detours" are identified (like Berkshire Hathaway has been doing for so many years,hence the irony), because not everybody can gain everything. As Munger humorously observes, only 20% of us can stay in the market's top quintile of performance. According to the Munger counter model, this opportunity certainly appears but only sporadically. "You study these companies exhaustively to spot the opportunity when it arises. Then you must invest heavily. The trick to win is work, work, and work. Then work a bit more and pray you will have some important insights in life and know how to make use of them."[7]

Dynamo Cougar x Ibovespa x FGV-100
Performance up to june/2003 (in R$)

Period	Dynamo Cougar	FGV-100	Ibovespa
60 months	356,23%	276,35%	33,33%
36 months	82,10%	48,51%	-22,04%
12 months	35,36%	37,41%	16,07%
6 months	8,09%	17,50%	15,08%
3 months	9,03%	18,34%	15,06%

NAV/Share on 30/06/2003 = 38,951678595

Microeconomy provides Munger with one of his favorite plots: the old economies of scale (too big to fail) and "diseconomies" of scale (too big to win). It also contributed with scenarios of technological impact. New technologies can be excellent, provided a certain degree of monopoly exists in the respective business, so that cost reductions do not have to be immediately passed on to customers. In such circumstances, the initial investment is, rightly, compensated by the profits. In order to foresee what will happen, one needs technical knowledge about the technological innovation. For this very reason, both Munger and Buffett have always disdained businesses they are not able to understand, where they will only have competitive disadvantages. Buffett uses to ask: "How can you beat Bobby Fisher? Answer: Playing anything but chess with him". Munger takes up the point: "We have never bought anything we did not understand. And our definition of understanding is the ability to ascribe a reasonable probability of knowing how a business will be performing in ten years' time".[8]

Accounting teaches us the basic language of the world of companies. It's simplicity, almost monotony, is hardly a thrill for analysts. But here lies the danger, since accounting records are the basic annotations of what happens in a company and are, almost always, the best way to understand and monitor its performance consistently. Attentive and continuous (verging on the obsessive) reading of company's annual reports gives the intimacy essential to promptly perceive if, at any time, something has gotten out of place, for better or for worse. Both Buffett and Munger have an in-depth knowledge of all possible accounting issues. Through them, both are able to identify, usually with great ease, the economic, fiscal, and financial implications of the facts underlying the accounting records on the value of the companies and, consequently, on the value of their shares.

Biology gives the invaluable contribution of the processes of natural selection in the evolution of the species (see our Report "If Darwin Were a Company Analyst"). Physics was the path through which Munger first discovered the wonders of science. From then, he used Newtonian mechanics, theory of relativity and quantum mechanics as paradigms for the explanation of complex compounds[9]. At the core of this type of explanation always lies the search via the simplest manner, the most direct route. As any physics major knows, the easiest route is invariably the best route.

There are a number of other models Munger mentions less frequently, and which are part of his arsenal of mental mechanisms for dealing with the many variables he must investigate. We have deliberately omitted the discipline that seems to have most influenced him, where he appears to have sought more structures to house his analyses. That is Psychology, which ranks high in the Munger approach and that, single-handedly, inspires the second block mentioned earlier.

This second block has less to do with how to understand a group of data and information than, on the contrary, with how to resist the temptation of bad judgements, so common and frequent in investment decisions. From Psychology, we take the models that enable us to understand individual human action. It only

(5) *Outstanding Investor Digest, December 31, 2002, p. 35. Munger claims that, without fluency with numbers, investors are like "a one-legged man in an ass-kicking context", one of his favorite expressions. See Informal Talk by Charles T. Munger, in Damned Right, op.cit., p. 266*

(6) *Outstanding Investor Digest, December 31, 2002, p. 38.*

(7) *Outstanding Investor Digest, December 31, 2002, p. 31*

(8) *Outstanding Investor Digest, December 31, 2002, pg. 39.*

(9) *"What really opened science up to me is when I took freshman physics. Just as Einstein was charmed when he found Euclid's geometry, when I saw Newtonian mechanics, how perfectly it predicted and how wonderfully accurate it was, it just charmed me. So the drift of my mind was heavily influenced by that experience." Outstanding Investor Digest, December 31, 2002, p. 35.*

takes a magician's show for us to realize that many are able to see things that are not happening and, at the same time, not to see things that are, in fact, happening. Perception is subject to the inner mechanisms of the mind and it is the mind that commands our reactions, regardless of whether the initial impulse arose from an illusion and from reality. In his more didactic speeches, Munger always emphasizes the paramount importance of the psychology of bad judgments because that is the reason why one could come upon the exceptional situation, for an investor, where everybody else is wrong and he is right[10]. It is also through a branch of Psychology that he becomes acquainted with the terrible problem of the pavlovian association which makes us develop animosity towards someone who tells us things we do not like hearing. A long list of other distortions follows: psychological denial of the obvious, a desire to be right that is so strong that it refuses to recognize evidences to the contrary, the obligation to correspond to third party expectations, the attribution of value to something based on comparisons with another thing much worse, the ideology that creates the understanding before the fact, the bias caused by badly designed incentives, wishful thinking, *etc.*

In June 1995, Charlie Munger gave a lecture at Harvard University exclusively on this subject where he listed 24 Standard Causes of Human Misjudgment[11]. A transcription of this speech is one of the compulsory reading materials at Dynamo.

Curiously enough, Munger defends erudition and wide-ranging knowledge but, at the same time, he defends specialization. He claims that the investment game is one of predicting the future better than everybody else. And how does one do that? One way is to limit your area of knowledge. If you want to predict too many things, you will make too many mistakes; you will fail due to lack of specialization. The explanation for this apparent paradox provides a good summary of Mungerian aphorisms: in his opinion, it is essential to know a lot (hence, the wide-ranging knowledge) in order to do a few things (hence, the specialization) many times very well. At Dynamo, we have a strong empathy with this cultural matrix.

However, experience and wisdom are not enough to explain with precision the mysteries of what really makes companies successful. There is still a wide margin for the imponderables. How can one explain why a sector dominated by so few companies, such as air transportation in the US produces so many losses while the highly competitive breakfast cereal market is so profitable? Or why Japanese insurance companies almost went bankrupt because they sold perpetual 3% annuities and Japanese interest rates dropped below 1% *per annum*? Why, in some areas, do Coca-Cola and Pepsi Cola bottling plants make so much money and in others go broke? Charlie Munger is often asked these questions and even he has trouble answering them. What matters is that the fundamentalist, or value, approach still seems to be the surest method for making correct investment choices in the stock market, particularly when the focus is in the long-term. Munger is radical on this: "All intelligent investing is value investing".[12] Despite his awareness that this method is not foolproof, he defends it with conviction: "If you want to succeed, the question you must always ask yourself is why? why?, why?. And you need to relate the answers to the structures of profound theories. You have to know the main theories. It means a lot more work but also more fun". We couldn't agree more.

Rio de Janeiro, July 18, 2002

(10) *For anyone interested in consulting one of Munger's original sources on this matter, the book is Influence, by Robert B. Caldini, Harper Collins College Publishers, 1993.*

(11) *For those interested, a reference site that reproduces Mr. Munger's speech is www.tilsonfunds.com/mungerpsych.html*

(12) *Outstanding Investor Digest, December 31, 2002, p. 35.*

Dynamo Cougar x Ibovespa x FGV-100
(in US$ dollars)

	DYNAMO COUGAR*			FGV-100**			IBOVESPA***		
Period	**Quarter**	**Year to Date**	**Since 01/09/93**	**Quarter**	**Year to Date**	**Since 01/09/93**	**Quarter**	**Year to Date**	**Since 01/09/93**
1993	-	38,78	38,78	-	9,07	9,07	-	11,12	11,12
1994	-	245,55	379,54	-	165,25	189,30	-	58,59	76,22
1995	-	-3,62	362,20	-	-35,06	87,87	-	-13,48	52,47
1996	-	53,56	609,75	-	6,62	100,30	-	53,19	133,57
1997	-	-6,20	565,50	-	-4,10	92,00	-	34,40	213,80
1998	-	-19,14	438,13	-	-31,49	31,54	-	-38,4	93,27
1999	-	104,64	1001,24	-	116,46	184,73	-	69,49	227,58
2000	-	3,02	1034,53	-7,69	-2,63	177,23	-10,45	-18,08	168,33
1stQuar/01	-0,98	-0,98	1023,40	-10,06	-10,06	149,33	-16,00	-16,00	125,39
2ndQuar/01	-6,15	-7,07	954,28	-1,76	-11,64	144,95	-3,73	-19,14	116,97
3rdQuar/01	-27,25	-32,40	666,97	-33,81	-41,52	62,12	-36,93	-49,00	36,84
4thQuar/01	38,52	-6,36	962,40	55,88	-8,84	152,71	49,07	-23,98	103,99
1stQuar/02	13,05	13,05	1101,05	3,89	3,89	162,55	-2,76	-2,76	98,35
2ndQuar/02	-19,15	-8,60	871,04	-22,45	-19,43	103,60	-31,62	-33,51	35,63
3rdQuar/02	-22,31	-28,99	654,37	-31,78	-45,04	38,90	-44,17	-62,88	-24,28
4thQuar/02	29,76	-7,86	878,90	38,00	-24,15	91,67	45,43	-46,01	10,12
1stQuar/03	4,47	4,47	922,65	4,63	4,63	100,55	5,39	5,39	16,06
2ndQuar/03	27,29	32,98	1201,73	38,16	44,55	177,07	34,33	41,58	55,91

(*) The Dynamo Cougar Fund figures are audited by KPMG and returns net of all costs and fees, except for Adjustment of Performance Fee, if due.
(**) Index that includes 100 companies, but excludes banks and state-owned companies. (***) Ibovespa average.

For any further information, visit our web site:
www.dynamo.com.br

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