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## **CAN FUTURE STUDIES TRULY PREDICT THE FUTURE? A RETROSPECTIVE ANALYSIS OF TWO APPROACHES**

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### **ABSTRACT**

In the field of Business Administration, Future Studies arise as a valuable tool supporting the development of Strategic Planning, indicating changes induced by the environment in corporate policies, objectives and actions. Companies and their leaderships may discover resources and energies when they acquire a holistic and long term perspective of the world, enabling them to forecast, plan and deal with changes that will impact the future. This paper poses to examine the current standing of two samples of Future Studies, comparing trends foreseen and their evidence at present. The analysis focused on two studies with distinct methodological approaches: a quantitative study analysed by Mario Henrique Simonsen, and another, of qualitative nature, by Alvin Toffler, based on the analysis of trends and social, economic, technological and political phenomena. Evidences as to the forecast trends were mapped by means of bibliographical research of secondary macroeconomic and socio-cultural data. Based on this analysis, the limitations of the methods ground on projections and the advantages of utilizing qualitative or mixed approaches when the prediction horizon involves the long term, were discussed. It's worth mentioning that the purpose of Future Studies is not to vaticinate with absolute precision what tomorrow will be like but rather supply indicators so that adequate strategic decisions under uncertain and turbulent environments may be taken today.

**Key words:** Future studies. Organizational strategy. Research methodologies.

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## **OS ESTUDOS DO FUTURO PODEMO REALMENTE PREVER O FUTURO? UMA ANÁLISE RETROSPECTIVA DE DUAS ABORDAGENS**

### **RESUMO**

No campo da Administração de Empresas, os Estudos do Futuro figuram como instrumento valioso para auxiliar a desenvolver o Planejamento Estratégico, ao apontar as mudanças induzidas pelo meio ambiente, nas políticas, metas e ações das empresas. As empresas e suas lideranças podem descobrir recursos e energias, quando adquirem uma visão de mundo holística e de longo prazo, o que lhes permite prognosticar, planejar e lidar com as mudanças que afetarão o futuro. Neste trabalho objetiva-se examinar a atualidade de dois exemplares de Estudos do Futuro, comparando as tendências previstas e suas evidências atuais. Na análise foram focalizados dois estudos com abordagens metodológicas distintas: um estudo quantitativo, analisado por Mario Henrique Simonsen, e outro, qualitativo, de Alvin Toffler, apoiado na análise de tendências e fenômenos sociais, econômicos, tecnológicos e políticos. Evidências relativas às tendências projetadas foram levantadas por meio de pesquisa bibliográfica de dados secundários macroeconômicos e socioculturais. Com base nessa análise, discutem-se as limitações dos métodos baseados em projeções e as vantagens de utilizar abordagens qualitativas ou mistas quando o horizonte de previsão envolve o longo prazo. Vale sinalizar que o propósito dos Estudos do Futuro não é vaticinar com absoluta precisão como será o amanhã, mas fornecer indicadores para que decisões estratégicas adequadas, em ambientes incertos e turbulentos, possam ser tomadas hoje.

**Palavras-chave:** Estudos do futuro. Estratégia organizacional. Metodologias de pesquisa.

## 1 INTRODUCTION

Whatever is done today shall render an impact as time goes by. To make best use of the fact one might shape the future as of actions taken today, it is of vital importance to take into account the future when taking decisions now. The field of Future Studies relates to the multidisciplinary research of changes, trends, driving forces, counter flows and uncertainties in a multiplicity of aspects of human life, with views to exploring in what ways the future might be different from today (Coyle, 1997). The objective is to figure out the dynamics of the interaction between these forces, study potential changes which might be shaping the tomorrow and systematically explore, create and test visions of the future to subsidize long term planning (Saleh, Agami, Omran, & El-Shishiny, 2008). Particularly in the field of Business Administration, future studies arise as a valuable tool supporting the development of Strategic Planning upon indicating changes induced by the environment in corporate policies, objectives and actions (Bressan, Toledo & Souza, 2010; Almeida, 2009).

On a worldwide basis, the corporate environment is characterized by constant structural changes, dynamism and volatility whose course isn't always clear to planners. To this effect, the advance offered by Future Studies in as much as strategic planning is concerned, lies in the explicit acknowledgement that the planner must incorporate the issue of uncertainties in the planning process. The taking into account of several future alternatives when formulating objectives, guidelines and strategies demands, on behalf of strategists, greater flexibility and agility to adapt to trends and events that present themselves as critical (Silva, Wright & Spers, 2007).

In this paper, the objective is to discuss two samples of Future Studies, which differ, given their distinct methodological approaches. The two futurological exercises analysed, covering a 30 year horizon, were the books **Brazil 2001**, written by Mario Henrique Simonsen, and **The Third Wave**, by Alvin Toffler. Whilst in the first statistical methods were employed

to foresee the behaviour of macroeconomic variables, in the second, a qualitative methodological approach was adopted, although Toffler does not specify which analysis techniques he utilized. Comparing the results of the predictions of both studies with effective data and real evidences, the up-to-dateness of the studies was verified, with views to collecting indicatives concerning the advantages and impairments of preparing predictions utilizing each of the approaches employed: **qualitative** and **quantitative**.

## **2 THEORETICAL REFERENCE**

### **2.1 STRATEGIC THOUGHT AND ENVIRONMENTAL ANALYSIS**

Bressan and Toledo (2004) synthesize strategic thought as the capacity to: collect and process a large amount of information and from the same extract what is truly relevant to decision making; perceive the organizational system as a whole and understand its interdependencies; understand the global situation and envision the scenario – past, current and future – to define alternatives and future possibilities; consider the variables that are external to the company – the community, the political, social and economic forces – to identify strategic opportunities for success and problem solving, for decision making and road mapping of actions.

A very unstable external environment exerts significant impact on the strategy definition process given that external changes affect corporate performance, driving them to continuously revise their strategic positioning, objectives, goals and action programs. The efficiency of strategic planning is subject to an insightful perception of the environment's singularities which influence the organization's behaviour and performance. Thus, environmental analysis is a critical stage in the strategic planning process given it conditions all subsequent stages, justifying special mention in literature covering the subject matter (Novaes *et al.*, 2008; Costa F<sup>o</sup> & Toledo, 1999). The types of information monitored by organizations is complex and varied and includes competitive, market, technology,

regulatory, resources, demographic trends, social, economic and political factors amongst others that are more specific to each organization (Platchek, Carvalho & Silveira, 2010). The elements of the environment that are external to the corporation are uncontrollable. The company must monitor them by means of Environmental Analysis, despite its limited interference on these in terms of promoting their change. This will in turn allow for the identification of opportunities and threats that will serve as analytical grounding for strategic choices that shall lead to the efficiency of the entire corporate adaptation process (Almeida, 2009; Fischmann & Almeida, 2009).

## 2.2 FUTURE STUDIES

Incorporating the future into planning and decision making processes allows companies to envision new paths to reach long term objectives and anticipate future issues. Corporations and its leaders might discover resources and energies upon acquiring a holistic and long term perception of the world to predict, plan and deal with changes that shall shape the future (Mclean, 2007). The *Futurology Forum* defines the field of Future Studies as being one to:

Learn with past events and developments and use this knowledge to take decisions concerning the future. Analyse what is known about current trends and innovations to think in a constructive and strategic manner, which in turn helps meet objectives." (2007, *apud* Mclean, 2007, p.17).

According to Hamel and Prahalad (1994), the future vision of a segment must be ground by a detailed perception of trends in life styles, technology, demography and geopolitics but equally rests on imagination and foresight. To Coyle (1997), the concept of foresight (*forecast*) does not imply in predicting that something shall certainly take place but in thinking systematically about an unknown tomorrow, observing and analysing broad trends and events that might occur given reasons that can be explained. Thus one can generate a comprehension of these events so as to support

efficient interventions, take more intelligent long term decisions or build forms of protection (Saleh *et al.*, 2008).

Forecasting the future is, at the same time, a prevention against risks and a risk activity, since, that to come is a mixture of reasonably predictable elements (human nature, for instance, tends to remain as is; some technological changes can be relatively easily modelled) and of things that are impossible or very hard to anticipate, such as the rise of new business models. Futurologists acknowledge that propositions concerning possible futures that can be utilized to define actions and stimulate creative ideas are not “knowledge” since “the future is not factual until it has become the past” (Bell, 2003 *apud* Walton, 2008). However, once a decision is taken, the future begins to be influenced; one cannot know what would have been the consequences of taking an alternative path (Walton, 2008).

Brown (2007) makes a distinction between the terms trends and driving forces: the latter refers to changes in the environment that can suddenly take place and cause an impact (such as a change in legislation), whilst trends last longer. In strategic planning, both the impact and the probability of trends and forces must be taken into account; managers have to tackle risks and take decisions, even if these are surrounded by uncertainties (Brown, 2007; Bressan, Toledo & Souza, 2010).

### 2.3 FUTURE STUDIES METHODOLOGIES

Saleh *et al.* (2008) summarize into seven basic philosophies the paradigm of Future Studies: 1) One cannot know the future but rather a set of possible futures; 2) The probability of a future event or condition can be modified by policies whose consequences can be forecast; 3) There are different levels of probabilities and prediction; 4) Human beings shall increasingly influence the future; 5) Predictions shall be inexact and incomplete; 6) No method is entirely reliable; using a mixture of methods improves predictions; 7) Anticipation and planning must be dynamic and allow for reaction to new information and insights.

In the field of Future Studies, there is a distinction between forecasting of prospection in as much as prediction supposes that one can foresee what shall happen with a high level of certainty without taking into account the active role of human beings (Walton, 2008; Coyle, 1997), whilst prospection employs a multidisciplinary and systemic standpoint based on the principle that problems cannot be correctly understood if reduced to only a single dimension (Slaughter, 1996, *apud* Walton, 2008; Silva *et al.*, 2007). Prediction is extensively supported by statistical methods and econometric modelling, as of the assumption that the past is a sound prediction of the future; therefore, it favours continuities and certainties. As of information concerning the past and the present, adopting a given hypothesis and upon usage of a method that is compatible with the adopted hypothesis, one comes to information concerning the future (Toledo, 1973). Prospection considers that the future might be marked by uncertainties which ought to be taken into account under a flexible and qualitative approach.

In Akasaka's (2000) opinion, prediction techniques can be divided into: *extrapolative*, *exploratory* and *normative*. *Extrapolative* techniques project in the future the events verified in the past, assuming situations where there is a continuity of trends and historical series of data. *Exploratory* techniques concentrate the analysis on the change process, focusing on the events and actions that are capable of modifying future situations, dealing with longer time horizons, with a greater number of possible results and, ultimately, with the strongest uncertainty. *Normative* techniques on the other hand seek to guide actions that shall determine the future of values, needs and environmental conditioners as relative to the object of prediction.

One cannot associate Future Studies to a single category of investigation; in this field, given that no method is entirely reliable, using a mixture of methods is helpful when it comes to forecasting. Future Studies constitute a blend of art and science, of quantitative and qualitative methods and one can say that it uses both the right and the left side of the brain. It's core focus lies in understanding how issues, forces and



disciplines which are apparently diverse, interconnect. A broad range of disciplines can contribute with the field of Future Studies, from History, Arts (visual arts to cinema and music), Anthropology, games, computer simulations, statistics, mathematics and communications (Shostak, 2004).

Saleh *et al.* (2008) and Patton (1990) classify the methods employed by futurologists into *qualitative*, *quantitative* and *mixed*. According to Patton (1990), *qualitative* research's main concern is the understanding of issues given that it allows the evaluator to study them in detail and in-depth, covering the field work without predetermined categories. *Quantitative* research methods, on the other hand, require the use of standardized measures so that the various perspectives and experiences may fit into a predetermined number of reply categories to which numbers are attributed. The advantage of the quantitative approach is that the limited group of questions facilitates comparison and statistical clustering of data. The set of research discoveries is generalizable and presented in a summarized and parsimonious manner. In contrast, qualitative methods produce a richness of detailed information concerning a far smaller number of people and cases, but on the other hand, reduce the possibility of generalization (Patton, 1990; Mozzato, 2010).

### **3 THIS STUDY'S METHOD**

The objective of this research was to analyse, in light of up-to-dateness, the evidence, process and convergence of results of two Future Study methodological approaches: **qualitative** and **quantitative**. To address such objective, a bibliographical research was conducted (Cervo & Bervian, 1996) in two stages, the first consisting in verifying literature specialized in Future Studies, with views to obtaining a supporting theoretical reference. Subsequently, two Future Studies of relevance were identified, over a decade old and utilizing distinct research methodologies, one being qualitative and the other quantitative: the books ***The Third Wave***, by Alvin Toffler (1980) and ***Brazil 2001***, by Mario Henrique



Simonsen (1969). The second stage, based on bibliographical research of secondary data, focused on the analysis of projections and trends, utilising as evidence macroeconomic and socio-cultural data collected from multiple data sources (Eisenhardt, 1989; Yin, 1994): data banks from institutions such as UN and the World Bank, journals and internet sites.

The present study defined a protocol for the analysis of books comprising the following topics: brief summary of the book; time scope of predictions; methodology utilized for predictions; major predictions and analysis of the up-to-datedness of trends using secondary data as evidence.

#### **4 ANALYSIS OF THE SELECTED FUTURE STUDIES**

##### 4.1 BRAZIL 2001, MÁRIO HENRIQUE SIMONSEN (1969)

The book **Brazil 2001** examines the economic and social conditions of Brazil in the 60's and prior decades in response to the Hudson Institute's macroeconomic projections, contained in the book *The Year 2000*, by Herman Kahn and Anthony Wiener (1967). The Hudson Institute is a *think tank* devoted to global economic and political matters, founded in 1961 in the United States by Herman Kahn. Currently the institution is devoted to interdisciplinary studies in the fields of defence, international relations, economics, culture, science, technology and law.

In the first chapter of the book **Brazil 2001** (1969), Simonsen analyses the projections related to several countries pictured in the book *The Year 2000*. Kahn and Wiener (1967, *apud* Simonsen, 1969) outline possible macroeconomic scenarios for the world in the year 2000, as a means of forecasting and avoiding issues that could have occurred over the turn of the XX<sup>th</sup>. Century to that of the XXI<sup>th</sup>. In addition to serving as an alert for the future economic situation of the then underdeveloped countries, Kahn and Wiener's work also assisted the consolidation of some groundings in Future Studies: its methodological and theoretical bases (such as the development of the scenario method), the use of

mathematical, statistical and scientific instruments to conduct predictions and the organization of interdisciplinary data banks (Andrioni, 2008).

The book *The Year 2000* utilizes a quantitative methodology (statistical projections) to predict the *per capita* income of some countries in the world in the year 2000, based on the average growth rates of the Gross National Product (GNP) and of the population verified between 1950 and 1965. PNB and population variables are considered independent between each other whilst income *per capita* is the result of the division of the real country's output by its population.

To be more specific, calculation stages comprised: 1) compilation, for each country, of the population estimates and the income *per capita* in dollars relative to the year 1965; 2) calculation of the National Gross Product in dollars, by multiplying two estimates; 3) prediction of demographic growth rates of countries until the year 2000; 4) population estimates by the end of the century based on these rates; projection of the growth rate of the actual product until the year 2000 (based on the average growth rates registered since the 2<sup>nd</sup>. World War); 6) projection of the National Gross Product in the year 2000 (in 1965 dollars) based on this rate; and 7) estimate of the *per capita* income in the year 2000, dividing the total projected product by the forecast population (Simonsen, 1969).

The time horizon of predictions is of 33 years and Kahn and Wiener's (1967, *apud* Simonsen, 1969) main predictions largely refer to a dictomic world, divided into two blocks: Developed World (North America, Western Europe and Oceania) and Underdeveloped World (Latin America, Asia –except Japan – and Africa). The countries of the second block would find themselves trapped into a cycle of poverty since, despite their real product increasing at the same approximate rate as that of developed countries, their population would tend to expand itself at a faster pace, as had been verified in the years prior to 1965. Therefore, there would be an increasing distance between the *per capita* incomes of the two blocks until the end of the XX<sup>th</sup>. Century. Simonsen (1969) thus summarizes the most relevant results of the Hudson Institute's projections:

1. The world population should expand to 6,4 billion inhabitants in the year 2000 (annual average growth of 1,86%) and the average income *per capita* would approximately be US\$ 1.700 (buying power in 1965).
2. The growth of the real product in the two blocks would occur at close rates, approximately 4,8% per year.
3. The world population of the underdeveloped world ought to grow at a far higher rate (2,15% per annum) than that of developed countries (1,15% per annum). Consequently, the population percent of underdeveloped countries in the world total would increase from 67,7% in 1965 to 74,8% in the year 2000.
4. Given the demographic gap, the average *per capita* income of underdeveloped countries would increase from US\$ 135 to US\$ 332 per annum (rate of 2,6% per annum), whilst that of the developed group would expand at rates of 3,6% per annum, shifting from US\$ 5.744 *per capita* (1965 dollars). Thus, the relative average distance between the two groups would shift from 1: 12,4 in 1965 to 1: 17,3 in the year 2000 (Simonsen, 1969).

Simonsen (1969) emphasizes that the authors of the book *The Year 2000* are cautious as to the feasibility of long term economic projections being wise enough to argue that these are subject to considerable margins of error. However he states: "these manipulations, nevertheless, are very useful given that they demonstrate where we are heading if we are not able to invert given trends " (Simonsen, 1969, p. 16). Therefore,

(...) from the technical standpoint this methodology can be considered very rudimentary, practically coming down to a series of exercises on geometric projections. Growth factors that usually integrate the econometric models – capital formation rates, technological progress, limits of foreign trade, etc. – are not emphasized in the analysis and are implicitly comprised in the growth rates postulated in the real product. Kahn and Wiener maybe are correct in avoiding more sophisticated methodologies given the uncertainty of their parameters within a third of a century's timeframe(Simonsen, 1969, p. 17).

With views to verifying the up-to-datedness of predictions in the book *The Year 2000*, macroeconomic data relative to the year 2000 is utilized, sought at secondary information sources, such as the sites of the world organizations UN and the World Bank. This analysis solely covers some countries mentioned in the original study given that a handful experienced major geopolitical changes as of 1967 (such as the end of the Soviet Union, the reunification of the two Germanys and the rise of new countries in Eastern Europe). Thus, of the original 29 countries, only 20 shall be included.

Starting with the analysis of population data, **Table 1** pictures the comparison between data forecast by the Hudson Institute and UN data relative to the year 2000. Analysing the column of differences between actual and projected populations and considering the extensive horizon of 33 years, the level of precision of predictions seems to be quite satisfactory. For nine countries, the difference remained below 10%; for seven countries it was between 10 and 20% and only four countries presented a more distant than projected by the authors, population growth. Note that the populations of the United States, Canada, New Zealand and Israel increased at levels below that foreseen, the same taking place with countries undergoing development such as Brazil, Mexico, Colombia, Thailand and Nigeria. The assertiveness rate of the study for this requirement demonstrates that trends relative to the population are a macro-environment variable, whose level of predictability is quite high and verifiable by means of statistical studies (Almeida, 2009).

In general, the population trend of less developed countries growing at a more accelerated rate than that of developed ones, seems to have remained. According to the Population Reference Bureau (2008), almost 90% of the world's population growth during the XX<sup>th</sup>. Century took place in countries of regions that the UN considered as being less developed: Africa, Asia (except Japan), Latin America, the Caribbean and Oceania (except Australia and New Zealand). The average birth rate in developed countries is of 1,6 births per women whilst in less developed countries (excluding China) it is of 3,2. Population growth can be explained by the decline in mortality, thanks to developments and efforts in public health, education, sanitary infrastructure and in disease prevention, without a corresponding decline in birth rates. In developed countries, it is often due to migration movements (*Population Reference Bureau, 2008*).

Social economic data that is not taken into account in the study such as: the rate of urbanization (which brings in addition to improvements in educational and sanitary conditions, lower incentives for large families); the increase in the level of education; decline of birth rates given

reproductive education; entry of women on the market place; and even diseases such as HIV/AIDS that reap large numbers of lives in Sub-Saharan Africa, might explain the discrepancies between the projections in the book *The Year 2000* and the actual data.

**Table 1 – Projected and Actual Population Comparison (2000)**

Country	Projected Population (millions of inhab.) <sup>1</sup>		Actual Population (millions of inhab.) <sup>2</sup>	Dif.
	1995	2000	2000	%
USA	195	318	285	-10%
Canada	20	38	31	-18%
Japan	98	123	127	3%
United Kingdom	55	60	59	-2%
Italy	52	60	58	-3%
Sweden	8	9	9	0%
France	49	64	59	-8%
Australia	11	20	19	-5%
New Zealand	3	5	4	-20%
Poland	32	45	39	-13%
Israel	3	4	6	50%
Argentina	22	33	37	12%
Mexico	43	133	99	-26%
Colombia	18	55	42	-24%
China	755	1271	1.275	0%
Indonesia	105	239	211	-12%
India	487	988	1.017	3%
Thailand	31	74	61	-18%
Nigeria	58	176	115	-35%
<b>Brazil</b>	<b>82</b>	<b>212</b>	<b>172</b>	<b>-19%</b>

<sup>1</sup> Source: The Year 2000  
<sup>2</sup> Source: U.N. Dept. of Economic and Social Affairs

**Source:** Adapted from Kahn and Wiener (1967) *apud* Simonsen (1969) with information from the UN Dept. of Economic and Social Affairs

Brazil, according to IBGE's 2000 Census, has experienced a decline in its birth rate since the '80s; currently, this index is close to that of population stability. One of the reasons for this is the country's strong urbanization. The Brazilian rate of urbanization went from 75,6% in 1991, to 81,2% in the year 2000, primarily as a consequence of three factors: vegetative growth in urban areas, migration with urban destination and the incorporation of areas which in previous census were classified as being rural. In addition to urbanization, factors such as family, economic, social

and educational changes probably strongly contributed with the reduction in Brazil's population growth rate. As to GNP projections of the countries studied, **Table 2** pictures that Hudson Institute's projections (the values in 1995 dollars were updated to year 2000 dollars employing the Consumer Price Index of the US) were far more discrepant than in the case of population. Only the indicators of six countries presented differences which were lower than 20%; for five countries, the difference between the projected and actual GNP remained between 20 and 30%; and for nine (almost half of the sample), the differences were above 30%, in some cases reaching more than 60%.

**Table 2 – Comparison between GNP Projections for the Year 2000 and Actual Data**

Country	GNP Proj. (bilions of 1965 US\$) <sup>1</sup>		GNP Proj. (Y2000 US\$) <sup>2</sup>	Actual GNP (bilions of Y2000 US\$) <sup>3</sup>	Dif.
	1995	2000	2000	2000	%
USA	692,3	3.231	17.663	10.533	-40%
Canada	48,3	266	1.454	760	-48%
Japan	84,0	1.056	5.773	4.852	-16%
United Kingdom	98,5	389	2.127	1.544	-27%
Italy	56,8	265	1.449	1.260	-13%
Sweden	19,3	76	415	275	-34%
France	94,1	439	2.400	1.543	-36%
Australia	22,9	90	492	444	-10%
New Zealand	5,1	17	93	52	-44%
Poland	30,3	167	913	188	-79%
Israel	3,4	26	142	112	-21%
Argentina	11,0	43	235	300	28%
Mexico	19,4	91	497	578	16%
Colombia	5,0	20	109	91	-17%
China	74,0	408	2.230	1.329	-40%
Indonesia	10,4	29	159	174	9%
India	48,3	266	1.421	510	-64%
Thailand	3,8	30	164	122	-26%
Nigeria	4,8	22	120	33	-73%
<b>Brazil</b>	<b>23,0</b>	<b>107</b>	<b>585</b>	<b>715</b>	<b>22%</b>

<sup>1</sup> Source: The Year 2000  
<sup>2</sup> Calculation with CPI (Consumer Price Index USA) Inflation Calculator of the US Dep.of Labor  
<sup>3</sup> Source: World Bank

**Source:** Adapted from Kahn and Wiener (1967) *apud* Simonsen (1969) with information from the World Bank

Once again, discrepancies occurred between both the forecasts related to countries of the developed group and in relation to the others. However, note that in all countries of the sample, growth of the actual GNP

was under that forecast by Kahn and Wiener, except in Argentina, Mexico, Indonesia and Brazil, which expanded beyond estimates. According to Cuervo-Cazurra (2008), at the end of the 1980 decade, an effort to promote structural reforms in the economy in the Latin American region started, revising the model of importation substitution, economic opening, privatizations and improvements in the financial and administrative structure, which probably contributed with this growth.

In the specific case of Brazil, with a 22% growth above that forecast, one notices that the average growth rate of the Gross National Product in the period between 1967 and the year 2000 surpassed the 4,5% projected by the Hudson Institute (Simonsen, 1969). Therefore, one may conclude that predictions of the variables associated with political power and the economy are somewhat less precise than those of population growth. Macro-economic trends can only be projected in the short term; in the long term, one can only come to an approximate vision of them (Almeida, 2009).

In as much as income *per capita* (GNP divided by population) is concerned, once again projections remained below actual figures (column 6 of **Table 3**) for several countries examined, except Argentina, Mexico, Colombia, Indonesia and Brazil. Note that the actual Brazilian income *per capita* was 50% greater than that forecast, thanks to the combination of reduced population growth and greater increase in the Gross National Product. The gap between the per capita incomes of developed countries and of those underdeveloped, taking Brazil and Latin American countries as base of the sample, did not present itself as being so significant. The last column of Table 3 pictures the differences in the relation between Brazil's per capita income and that of other countries, when one compares to that forecast by Kahn and Wiener and the actual figures. If one compares, for instance, the difference between Brazil and the US in 1965 (in and around 1: 12,7), which the authors forecast to shift to 1: 20,1 in the year 2000, it can be verified that in reality, it remained at 1: 8,9. Thus the gap between the two countries did not increase, but rather, narrowed. Therefore the



bleak prospects concerning an increasingly greater relative discrepancy between Brazil and rich countries (in terms of GNP per *capita*) did not come true. Hudson Institute's predictions presented failures, somewhat less in terms of population growth but strongly in as much as GNP expansions are concerned.

**Table 3 – Comparison between Actual and Projected GNP per Capita**

Country	Proj. income per capita (Y1965 US\$) 1		Proj. income per capita (Y2000 US\$) 2	Actual GNP per capita (Y2000 US\$) 3	Dif. %	Actual GNP per capita (Y 2000 US\$) 4	Nbr times Brazil's income per capita (proj.) 1		Nbr times Brazil's GNP per capita (actual)	Dif. %
	1995	2000	2000	2000	%	2000	1965	2000	2000	%
USA	3.557	10.160	55.541	36.958	-33%	34.599	12,7	20,1	8,9	-56%
Canada	2.464	7.070	38.649	24.516	-37%	23.219	8,8	14,0	5,9	-58%
Japan	857	8.590	46.959	38.205	-19%	36.649	3,1	17,0	9,2	-46%
United Kingdom	1.804	6.530	35.697	26.169	-27%	24.151	6,4	12,9	6,3	-51%
Italy	1.101	4.450	24.327	21.724	-11%	19.269	3,9	8,8	5,2	-41%
Sweden	2.497	8.679	47.445	30.556	-36%	27.287	8,9	17,2	7,4	-57%
France	1.924	6.830	37.337	26.153	-30%	22.548	6,9	13,5	6,3	-53%
Australia	2.009	4.612	25.212	23.368	-7%	20.867	7,2	9,1	5,6	-38%
New Zealand	1.932	3.195	17.446	13.000	-25%	13.654	6,9	6,3	3,1	-50%
Poland	962	3.680	20.117	4.821	-76%	4.455	3,4	7,3	1,2	-84%
Israel	1.334	5.839	31.920	18.667	-42%	18.363	4,8	11,5	4,5	-61%
Argentina	492	1.300	7.107	8.108	14%	7.703	1,8	2,6	2	-24%
Mexico	455	680	3.717	5.838	57%	5.935	1,6	1,3	1,4	8%
Colombia	277	359	1.963	2.167	10%	2.010	1,0	0,7	0,5	-29%
China	98	312	1.755	1.042	-41%	949	0,4	0,6	0,3	-50%
Indonesia	99	123	672	825	23%	800	0,4	0,2	0,2	0%
India	99	270	1.476	501	-66%	453	0,4	0,5	0,1	-80%
Thailand	126	402	2.198	2.000	-9%	1.998	0,5	0,8	0,5	-38%
Nigeria	83	125	683	287	-58%	369	0,3	0,2	0,1	-50%
<b>Brazil</b>	<b>280</b>	<b>506</b>	<b>2.766</b>	<b>4.157</b>	<b>50%</b>	<b>3.707</b>	<b>1,0</b>	<b>1,0</b>	<b>1,0</b>	<b>0%</b>

<sup>1</sup> Source: The Year 2000

<sup>2</sup> Calculated per CPI (Consumer Price Index USA) Inflation Calculator of the US Department of Labor

<sup>3</sup> Calculated by dividing the actual GNP (Y2000 dollars) and Population

<sup>4</sup> Source: World Development Indicators and CIA World Factbook

The discrepancies of predictions relative to the GNP and *per capita* income demonstrate the difficulty in extrapolating economic trends, as indicated by Simonsen (1969, p.35): "we must not consider [the projections

of the book *The Year 2000* in as much as Brazil is concerned] as a fatidic vaticinator of the country's future since, over long periods of time, facts frequently challenge the imagination of economists".

The conclusion one might draw from this exercise is that economic analysis must be viewed as a set of cause and effect relations, not as a science of exact predictions. For Simonsen (1969), mathematical projections based on extrapolations are of more value as alerts, indicating the factors on which one may and must act.

#### 4.2 THE THIRD WAVE, ALVIN TOFFLER (1980)

Considered a predecessor of Future Studies, Alvin Toffler taught at Cornell University and at the New School for Social Research, was *Fortune* magazine's editor and currently works as a consultant for companies and US government organizations.

His book **The Third Wave (1980)** covers a horizon of 30 years for predictions which were conducted employing exploratory techniques and focused on the analysis of change processes in society. Although the author does not specify which qualitative methods he used, one can imagine the content analysis and that of the argumentation. His main sources of information included secondary data extracted from documents, research and documentaries, as well as primary data from interviews with experts and relevant players in varied fields of knowledge: economy, social psychology, military history, politics, pop culture and religion.

Toffler (1980) emphasises that the work contains his personal and sociological vision and does not pose to be objective or scientifically proven. The proposal of the book is to synthesize the substitution of the industrial society for a new type of social order, fruit of the coalition of new values and technologies, new geopolitical relations, life styles and means of communication. Starting from a historical analysis and reaching out into the future (start of the XXI Century), Toffler (1980) exposes in detail his vision

of operational changes on a global level and foresees its results in different fields of human life.

Metaphorically, the author divides the history of human civilization into three waves: the agricultural phase, the industrial one and the Third Wave that started in 1955 with the introduction of impacting innovations such as the computer, commercial jet trips and birth control and which gained strength as of the '80s. Many of the political and social conflicts of the '80s were results of the collision between forces of the Third Wave and the economies and institutions of the Second. In other words, to understand the world, even today, one must perceive it as a battle between those that strive to preserve industrialism and those that seek to surpass it. In addition to the revolution in information technologies, the era of information and knowledge brought along other socio-political forces such as the movements for individual rights, for freedom and democracy, as well as the globalization of trade, with greater movement of goods and services.

The changes foreseen by Toffler are distributed in the technological, social, biological, psychological, information and power spheres, in addition to processes and principles. Toffler analysed these changes and with over two decades of prior notice, foresaw macro trends such as the acceleration of the rhythm of life, the decline of the traditional family nucleus, the saturation of information, the expansion of religions, the demassification of media and the threat of terrorism, amongst other aspects of contemporary life. Amongst these prognostics there are references to domestic personal computers, the rise and expansion of cable TV, cloning, virtual reality, niche markets, work at home and product customizing.

The author also foresaw the digital revolution, the growth of the importance of communications, nanotechnology and biotechnology, outsourcing, franchises, the temporary organizational formats, network organizations and the re-structuring waves of corporations. The Third Wave would be characterized by the fall of dependency on non renewable fossil fuels and by the search of a new energy base with renewable and diversified sources. New technologies and sciences, sciences of the sea, ecology and space sciences, would give rise to new industries. Meanwhile, classical

Second Wave industries (steel, automobiles, textiles and machinery, amongst others) would be transferred to countries undergoing development. The productivity of new industries would be incremented thanks to computers, polymers and semiconductors, data processing, advanced communications, systems engineering and artificial intelligence, amongst others.

Further within the technological sphere, Toffler predicted its counter movement: a kind of rebellion against technology characterized by the concern with the frailness of the biosphere, residues and pollution, by ecological restrictions to technology and by the desire to see global resources better shared between rich and poor.

The main forecast in the information sphere was the desmassification of the media and its segmentation, diversification and fragmentation into new means such as cable TV, news papers and specialized magazines, video games and the decline of news, generic and mass channels audiences. Culture would become more fragmented and individualized, the flows of information would increase in speed and quantity, people would start to give greater attention to that which to them would be important. Communication via computers would influence human intelligence, leading to an increase in the capability of analysing and establishing relations. Children would be particularly susceptible to develop different sets of abilities, becoming less dependent on parents. The continuous acceleration of technological leaps, market niches, virtual reality and the informational chaos that digitalization would bring: all of this Alvin Toffler anticipated when the personal computer did not exist and even the more so, the internet.

In the economic sphere, highly technology driven production and information processing base would enable mass production to evolve, becoming segmented and customized, with smaller production lots. These new forms of producing richness would impact the profile of workers at offices and factories, employment levels, the industrial structure and the distribution of political and economic power.

The production of the economy based on knowledge would favour the international division of work, its nature and even its production site. It would also promote an increasing inclusion of women in the productive

economy. People would seek greater work flexibility, in terms of where, when and for whom they'd work. Corporations and organizational behaviour would also change, with new codes of conduct, flexible work hours, search for more time to dedicate to personal projects and decentralization of structures.

All of the economic changes of the Third Wave impact the typical Second Wave family nucleus structure (providing father, housewife and two children), the social model that reflected a standard that was consistent with a society that was massified in its values and life styles, hierarchic and with a clear separation between family life and work. Single people, couples without children, families lead by only one parent, homosexual couples and hybrid families where children from previous marriages lived together, etc. These new family formats would begin to live in society, which in turn would have to provide different support modes in the form of laws, schools, architecture and work systems.

In the consumption sphere, the main theme is what Toffler called *prosumer*, a mixture of producer and consumer. Whilst the Industrial Revolution separates production and consumption in distinct sectors (something that did not exist in the First Wave), the society of knowledge facilitates the interpretation of both. That is, people can work producing goods and services for the market and, in parallel, produce for their own use, that of the family or the community. Toffler calls this the 'Invisible Economy'.

Aspects of the economic development of the industrial era itself would help promote the 'Invisible Economy': self service, support systems for people, specific interests or self assistance communities, automation of processes and services (such as electronic banking cashiers which utilize the involvement of the consumer in tasks to promote the externalization of costs) and products of the *Do It Yourself* kind. Another aspect of this would be linked to the customization of production, with greater involvement of the consumer in product design and manufacturing processes.

Baloch and Kareem (2007) summarize in **Chart 1** the main differences between the three waves, as defined by Alvin Toffler (1980):

**Chart 1 – Toffler´s Three Waves**

<b>Waves</b>	<b>Agricultural</b>	<b>Industrial</b>	<b>Technological</b>
<b>Main Commodity</b>	Land	Capital	Data
<b>Source of Energy</b>	Men and animals <input type="checkbox"/>	Fossil	Biotechnology
<b>Technology</b>	Artisan	Eletromechanic	Digital/Genetic <input type="checkbox"/>
<b>Production</b>	Artisan/Own use	Mass/Exchange	Prosumpt
<b>Distribution</b>	Restricted	Massive	Specialized
<b>Marketing</b>	One to One/Tradeoff	Centered on Products <input type="checkbox"/>	Centred on the Consumer <input type="checkbox"/>
<b>Information</b>	Interpersonal	Massified	Interactive
<b>Social Relations</b>	Spiritual	Contractual	Mutual
<b>Companies</b>	Individual/Partnerships	Corporation/Burocratic	Conglomerates/Ad Hoc
<b>Family</b>	Extended	Nuclear	Expanded
<b>Education</b>	Elite driven	Massified/Standardized	Specialized/Life lasting
<b>Authority and Power</b> <input type="checkbox"/>	Inhenrent	Elected	Semi-direct <input type="checkbox"/>

**Source:** Baloch & Kareem (2007)

According to Baloch and Kareem (2007), important changes occurred in traditional industries: the quest for alternative energy technologies; turbulence in the automotive and petroleum industries; the flourishing of the electronics, computer and communications segments. At corporate and organizational behaviour level, nowadays it is common practice to live with new work relations: *flexitime*, telecommuting, compensation in stock options; disorientation and mistakes on management's behalf; greater pressure on corporate social responsibility and not only as to its economic performance. One notices a clear movement against the power of corporations in terms of the globalized economy, inducing companies to have to take into account the interests of several stakeholders which previously were not considered in the strategic processes (Riding The Third..., 1999).

The same took place with families, the mass media, religions and the educational system. Toffler (1980) insists that there cannot be economic transformation without a corresponding turmoil in institutions and social, political and cultural values. In Brazil, for instance, women leading families increased in approximately 35%, shifting from 22,9% of total homes in 1995, to 30,6% in 2005 (IBGE, 2006). With new technologies, the generation of wealth no longer required physical force; the power of the

society of knowledge migrated to the mental sphere. This greatly changed the values of the society, enabling the occupation by women of job postings that previously were men's priority. In consequence, both family structure and raising of children were impacted.

Despite being optimistic, the author alerts that, given so many and so profound changes, conflicts are inevitable and derive from threats that the new order brings to economic, political and cultural leaderships of those who grew up within the previous system of wealth generation. An example in the sphere of business is the accounting and taxation system that favours product companies in detriment of those based on knowledge; or that of traditional retail companies which seek to detain the growth of e-commerce (Riding The Third..., 1999). Another example is the current resistance of the music and movie industry against the virtual consumption of its products.

In the midst of so many predictions with a reasonable level of precision, some exceptions can be noted. Some forecasts are far from having become part of current reality: space trips as part of our day-to-day; cities and production in space; mining under the ocean; floating cities. Furthermore, the full establishing of the new Third Wave society has not taken place in the time horizon foreseen by the author (by circa Y2010), although several of its characteristics can already be felt nowadays.

A major lesson that can be taken from the book **The Third Wave**, from a corporate planning perspective, is that strategies must be thought of in a holistic manner. The dense infrastructure of digital communications is able to connect people, organizations and different segments of society in a stronger manner. Culture, religion, politics, environment, ethics, all interpenetrate in an amazing manner – and influence the life of people and companies in new and surprising ways.

The book **The Third Wave**, as an example of Future Study based on a qualitative methodology proves to be assertive and current: in its proposal to build a "personal and sociological vision", the work resisted with great merit to the test of time.



## **5 FINAL CONSIDERATIONS**

In this work, the purpose was to examine the up-to-datedness of Future Studies prepared over three decades ago, comparing their predictions and actual evidences that might confirm or unauthorize them. Two studies representing distinct methodological approaches were taken into consideration so as to verify the efficiency of techniques.

The methodologies for Future Studies form a grading that ranges from an extreme characterized by objective and positive values (analytical, deterministic and restricted) to another, subjective and focused on interpretative and relative knowledge. Each point of view maintains different assumptions concerning the reality, truth, role of the subject, nature of the universe and character of the future. For the empirists, the universe is deterministic, the future can be known and predicted according to models; deviations are perceived as a result of inadequate models. On the other hand, in the interpretative vision, one doesn't need to explore various possible scenarios, challenging pre-existing thought, given that truth is conditional, conjectural and tentative. Plausibility and not the absolute truth is what one can demand in terms of scientific posture (Walton, 2007).

The two samples of Future Studies analysed helped confirm these distinctions. The chapter analysed of the book Brazil 2001 is ground on the inherent assumption that the future shall be a continuation of the present and of the past. The comparison between the projections of the book and current data demonstrated that this supposition was not supported by actual data, primarily in terms of projections for the evolution of the GNP and per capita income of the countries taken into account. This largely reinforces criticism towards quantitative techniques which project the past into the future, admitting regularity of results and absence of interference of explanatory variables over the independent variable, as is the case of the analysis of temporal series and the extrapolation of trends (Carvalho, 2009). Statistical projections are based on the assumption that events that might change relations and trends shall not take place; and if they do, shall not have considerable impact (Saleh et al., 2008; Coyle, 1997).

The analysis of predictions utilizing quantitative methods conducted by the Hudson Institute demonstrated that projection methods, when involving long terms, present at least two limitations. The first refers to the fact that these methods, given that they are not explanatory, only consider time as an independent variable, excluding others that might hold an explanatory or causative relation with the variable object of the prediction. The second limitation relates to uncertainty. The supposition that the future shall be a confirmation of the past and that there is regularity in results is not verified in turbulent and uncontrollable environments, which introduce high levels of subjectivity and uncertainty to decisions. (Toledo, 1973). The growth factors which usually integrate the econometric models and the explanatory methods – capital formation index, technological progress, foreign trade limits – were not included in the analysis of the institute, remaining implicitly assimilated in the growth rates postulated for the actual product (Simonsen, 1969). In a visible manner, the model did not foresee ruptures such as the petroleum crisis in the '70s and Japan's stagflation, just to mention some factors; the growth prediction for developed countries probably extrapolated their average growth rates in the period after World War II, which did not remain as such over the subsequent 30 years. If the authors had included more factors in their analysis, they would probably have obtained greater precision in the model. As Coyle (1997) states, upon reducing economic behaviour to statistical regressions, no matter how sophisticated, one shall not be able to capture, in the model, certain peculiarities of human behaviour.

In turn, the book **The Third Wave** sets out as of an interpretative point of view and intends to cover the macro-environment, taking into account political, economical, social, technological and ecological aspects, amongst others. It is very difficult to measure concrete evidences of predictions of a qualitative study as compared to a quantitative one, whereby both validity and reliability are simpler to evaluate. According to Walton (2007), only plausibility and credibility (are evidences believable?) and relevance of the study's affirmations for the comprehension of the

phenomena, can be used to evaluate the conclusions of qualitative researches, given that actual data can only be subjectively compared to the perceptions of the author. The analysis of Toffler's (1980) book demonstrated that he managed to anticipate with ample pertinence several aspects of the current reality, at a time when, what then existed, were no more than weak indications. Nevertheless, the extensive diversity of subjects and fields captured and the trends projected, prove to be predominantly correct, presenting both plausibility and credibility. Possibly this was favoured by the broad embracing of analysis variables and sources of information, which corroborates the affirmation that, the greater the need for in-depth research and exploration, the greater the adequacy of qualitative methods. (Reis, 1994; Teixeira & Albuquerque Filho, 2009).

Triangulation or combination of methodologies for the study of the same phenomenon helps neutralize the possible setbacks deriving from data sources, investigators or from the methods (Creswell, 1994). Triangulation can take place within the same paradigm (use of different types of qualitative data collection, for instance) or between methods (using qualitative and quantitative procedures). According to Pereira (2008), when the purpose of the research contains different levels, one can employ multiple methods. Thus one can obtain a convergence of results, discover different perspectives of the phenomenon and obtain greater scope and depth in the study, since the first method feeds the other which in sequence, is employed. For Patton (1990), data collected quantitatively and qualitatively can reside in the same study since both types present different strong and weak points, building alternative research strategies, which are not mutually excluding. The methodology depends on the problem at hand, of the objectives and of the context in which the research is conducted.

Despite starting off from different assumptions and perspectives, holding diverse purposes and at times presenting entirely contrary result, all types of Future Studies propose the same: to make one think about tomorrow. In a world of uncertainties and ever more rapid change, these constitute an efficient method to forecast which paths reality might take.

For managers in particular, Future Studies are a useful tool supporting long term Strategic Planning, predominantly at the stage of external environment analysis. To finalize, it's worth noting that the end purpose of Future Studies is not to vaticinate the tomorrow but rather supply indicators for adequate decisions that might be taken today. Affirmations as to the future are not required to reveal themselves as being absolutely truesome.

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