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Spyros Makridakis: An interview with the International Journal of Forecasting

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Spyros Makridakis is on the right of the photograph, Robert Fildes on the left.

Following the attainment of a place in the Greek Sailing Team in the Olympics of 1960, Spyros Makridakis set sail for New York University where

he obtained a PhD in 1969. His first academic appointment was at INSEAD where he is now a research professor. He has twice won the “Best Teacher Award” there. Spyros has held teaching and research positions with several other European and American institutions; as a research fellow with IIM

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19 Berlin, an ICAME fellow at Stanford University and
 20 a visiting scholar at MIT and Harvard. He is also
 21 currently a professor at the University of Piraeus.
 22 Whilst an academic he has advised numerous
 23 international organizations and government agencies
 24 and consulted worldwide. In addition to teaching
 25 and consulting expertise, he has also authored, or
 26 co-authored, twenty books including *Forecasting,*
 27 *Planning and Strategy for the 21st Century,*
 28 included in the list of the “One Hundred Most
 29 Influential Futurist Books” compiled in *The Ency-*
 30 *clopaedia of the Future,* (The Free Press) and
 31 *Forecasting Methods for Management* (Wiley)
 32 which reached its 5th edition and sold more than
 33 120,000 copies in twelve languages. He has also
 34 published more than 120 articles and book chapters.
 35 His paper “*The Accuracy of Extrapolative (Time*
 36 *Series) Methods: Results of a Forecasting Compet-*
 37 *ition*”, was voted as the most favourite paper
 38 published in the field of forecasting during the last
 39 25 years. He was the founding chief editor of the
 40 *Journal of Forecasting* and the *International Jour-*
 41 *nal of Forecasting.* His latest books are *Greek*
 42 *Management: Current State and Emerging Trends*
 43 (EAΣE), and *Forecasting: Methods and Applica-*
 44 *tions* 3rd Edition (Wiley).

45 In 1998–1999, he was the Chairman of the Board
 46 of TelePassport Hellas (a telecom firm) and from the
 47 beginning of 2000, until May, 2004 he was the
 48 Chairman of the Board of Lamda Development (a
 49 holding company, listed in the Athens Stock Ex-
 50 change). He has also been on the Board of Directors
 51 of five other companies and is currently the Chairman
 52 of the Board of PrivatSea, a yachting company, part of
 53 the Latsis Group. Spyros’ current research interests
 54 centre around how future technologies, and in
 55 particular the Internet, will affect business firms
 56 (and societies in general) and what kind of organ-
 57 izations and strategies will be required in order to
 58 anticipate, and exploit, emerging opportunities while
 59 steering clear of the dangers associated with such
 60 technologies.

61 The following edited interview took place in
 62 Piraeus, October 2004, nearly 25 years after the
 63 foundation of the IIF.

64 *Q: Spyros, you found yourself becoming a top*
 65 *international academic. You started life here in*
 66 *Greece in a rather difficult period of Greece’s*
 67

history. How easy was your path to academic 68
success? How difficult? 69

A: Well, the most difficult change was when I left 70
 Greece and went to New York University and I had 71
 to take courses. In Greece, they give you one book 72
 that you read for the whole course; then you had to 73
 memorise it and take an exam on this single book. 74
 When I went to New York, the teacher gave us two 75
 books, and told us... “Read them and come back 76
 next week to discuss them!”. So, you understand 77
 my state of mind... when my English was non- 78
 existent and I had to read two books within a week. 79
 So, I panicked! 80

Q: But, how did you get to New York in the first 81
place? Was that a big decision in itself? 82

A: At this time [in the early 1960s] I was sailing 83
 [one of Spyros’ favourite hobbies] ~~at the time~~ with 84
 the managing director of a big company in Greece, 85
 and he told me, “Look, if you want to do 86
 something with yourself – you’d better leave 87
 Greece and go study abroad, preferably business!”. 88
 So that’s how I went... and I was lucky because 89
 Business schools were just starting in the USA at 90
 that time so I found myself in an emerging field 91
 with great demand for PhD graduates. 92

Q: You got a scholarship or...? 93

A: Well, in the beginning I did not get the 94
 scholarship. I went on very little money, but 6 95
 months later I got the scholarship. At this time 96
 computers were just starting. I remember... 97
 (laughs)... the first computer I had access to was 98
 an IBM 6020. Input was through punch cards; you 99
 could see the little lamps of the computer working 100
 on multiplications and divisions. I learned how to 101
 do programming very quickly. From that point on it 102
 was very easy to get a scholarship. And not only a 103
 scholarship, but professors who, doing their con- 104
 sultancy, used me as a research assistant to help in 105
 their work. That meant that I was getting an 106
 amount of money that for me, at this time, was 107
 mythical! And it supported me through my degree 108
 without having to work in restaurants, as most 109
 Greek students were doing to sustain themselves. 110

Q: Your doctorate in NYU, what subject was it in 111
and did it involve forecasting? 112

A: In NYU we had two majors, for me one was 113
 statistics and the other was management. So I had 114
 to take a lot of courses in psychology and general 115

116 management, subjects which I think became very
117 useful to me later. My involvement with forecast-
118 ing came later when I went to INSEAD.

119 *Q: So you didn't study any forecasting in your*
120 *doctorate?*

121 A: No, no, my doctorate was in Management
122 Information Systems, that were very popular at the
123 time, and it was only when I arrived at INSEAD
124 that I got involved in forecasting. I was teaching a
125 course in Stats and no professor wanted to teach
126 Forecasting. I was there at that time with Steven
127 Wheelwright. So they told Steve and me, "Ok, now
128 you teach forecasting...". And that is how we
129 started. We tried to find a book, to find any material
130 to support the course but without success... so we
131 basically said: "Let's write a book!" And that's how
132 our first book came about, "*Forecasting Methods*
133 *for Management*" book (Makridakis & Wheel-
134 wright, 1989, first published in 1973).

135 *Q: The next stage in your career was an impressive*
136 *job at INSEAD.*

137 A: Well, INSEAD, don't forget, was just starting; it
138 was not very difficult to go to INSEAD. If you
139 were European and had completed a doctorate at a
140 decent US school there were lots of opportunities.
141 What was much more difficult, was to manage to
142 adapt to the environment and, equally important, to
143 make INSEAD more research oriented. The hardest
144 part was to change INSEAD, to make it more
145 academic. There was a period of time, maybe 10–
146 15 years, when I was publishing more than the
147 whole of the rest of the INSEAD faculty put
148 together. So in the beginning it was really tough
149 because there was no support, even to have a paper
150 typed. There were no PCs of course; typing a paper
151 was a major consideration... and you could not
152 type it on your own, you needed a secretary, you
153 needed someone to proofread it, to check the
154 spelling... a lot of work! Things that are now taken
155 for granted... if you wanted to make some changes
156 to the paper... it was cut and paste with the
157 scissors and glue... (laughs)... literally!

158 But you know, slowly we managed to change the
159 culture, starting with a very, very few people, to make
160 INSEAD more academic, to put increasing emphasis
161 on research. The advantage of this was that since
162 there was practically nobody doing research, there
163 was a lot of money available for those who wanted to

164 research. And one of the benefits was that I got
165 funding to support Michele Hibon to work for me as a
166 personal, full-time research assistant – practically
167 from my arrival there. And Michele helped a lot to do
168 all of the time-consuming computational parts of our
169 research. Because even when we did the first
170 comparative forecasting study in the mid-70s, and
171 had only 111 series to analyze, it was not easy to
172 process them in the computer we had access to at the
173 time. And the memory and the hard disk space
174 available were also serious bottlenecks when carrying
175 out large-scale (for the time) empirical research. I
176 remember we ran programs for the whole weekend to
177 have the results on Monday morning.

178 *Q: So, when did the work on forecasting compet-*
179 *itions start?*

180 A: This work started in 1975, submitting it first to
181 the *Journal of the American Statistical Association*
182 (JASA). And basically they said: "We do not
183 publish papers like this!" Because it didn't fit the
184 preconceptions of the time! We finally published
185 the paper in 1979 in the Royal Statistical Society
186 (Makridakis & Hibon, 1979);

187 *Q: As you just said, you wrote the book for an*
188 *INSEAD course. What made it so popular do you*
189 *think?*

190 A: Well, at this time, all the existing forecasting
191 books concentrated on just one topic. Let's say
192 there was a book that was dealing with statistical
193 forecasting, and not all of statistical forecasting but
194 just exponential smoothing like the book of Brown
195 (1963). And there was the book by Box and
196 Jenkins (1976) that only focused on their approach
197 to ARIMA models. Other books discussed only
198 qualitative or technological forecasting. And, our
199 idea with Steve Wheelwright was... "Let's inte-
200 grate all of these areas", they are all approaches to
201 forecasting, and put them in a book. And not make
202 it technical, but make it easy enough for the people
203 in management and students without a strong
204 quantitative background to follow. That was the
205 success of this book. By the way, I do not know the
206 exact figures; maybe it sold more than 120,000
207 copies... in 12 languages.

208 *Q: Is it about time for a new edition?*

209 A: No, no more editions... (laughs). So, that's
210 how we started and the next logical thing was:
211 "Why we do not also write a book that is more

212 academic?” That is how “*Forecasting, Methods*
 213 *and Applications*” came about; the idea basically
 214 was the same, but written from a more academic,
 215 more statistical standpoint. It is still selling well
 216 after all these years. Even now if you go to
 217 Amazon and put the keyword “forecasting”, that’s
 218 the book that comes first (Makridakis, Wheel-
 219 wright, & McGee, 1983).

220 *Q: You’ve talked about the early books and*
 221 *establishing a research environment at INSEAD.*
 222 *You quickly developed a number of research*
 223 *themes that have stayed with you for most, if not*
 224 *all of your career. How would you describe these?*

225 A: Well, let me tell you what made me start the
 226 research on “Competitions”. I was teaching a
 227 course on forecasting for executives, and sometime
 228 later one of the executives who had taken the
 229 course came and said: “could you do some
 230 consulting for us?” Of course I said: “Yes, I’ll do
 231 it”. And I went to this company and he was not
 232 using Box–Jenkins. At this time Box–Jenkins was
 233 ‘the method!’ Remember the mid-70s. “Why don’t
 234 you use it?” I asked. And he told me: “Look, I
 235 cannot explain the method to my boss!... to my
 236 executives. So I prefer not to use this method.” At
 237 that time, we (academics) all thought that the Box–
 238 Jenkins was the most accurate [of the extrapolative
 239 methods]. Instead, he used one that was much
 240 simpler; he was using decomposition, because he
 241 could explain it to his boss and executives. So the
 242 idea then came to me; let’s try to see how much
 243 more accurate is Box–Jenkins and then we can help
 244 people make the choice. Some methods may be
 245 more complicated but let’s find out what it costs to
 246 a company, in terms of reduced accuracy, if it is not
 247 used, how much a company loses by utilizing
 248 simpler methods. That was the idea that started off
 249 the research. In the beginning, I thought to generate
 250 some simulated series. So we generated the series
 251 and we were finding you know ... (laughs) that
 252 Box–Jenkins was not doing well! Simple Expo-
 253 nential Smoothing was doing better! So I said there
 254 is no way we are going to publish these results,
 255 because they will tell us the reason is that: “you
 256 have generated the particular series”. We need to
 257 find some real series. I knew several companies
 258 through the consulting I was doing at the time, so
 259 we manage to collect the 111 series and we started

analyzing them. We started with the simple 260
 methods like Naïve 1, Naïve 2, Exponential 261
 Smoothing and then we went up the [complexity] 262
 scale; and as we were going up the scale, we were 263
 finding that the accuracy was not getting better, to 264
 our big surprise! It is very difficult to realise how 265
 much time we spent checking the results. Because 266
 my belief at this time was that there was no way 267
 that Box–Jenkins and the other advanced methods 268
 would do worse than Naïve 2 and Simple 269
 Exponential Smoothing. 270

271 *Q: The previous work [on forecast comparisons]*
 272 *by Newbold and Granger (1974) that the Royal*
 273 *Statistical Society published... did you respond to*
 274 *that in any way?*

275 A: Yes we looked at all the citations that they 275
 included. You could say Newbold and Granger 276
 were rather the exception [in that Box–Jenkins 277
 ARIMA delivered the best performance] while 278
 many other studies were finding the same results as 279
 us. These studies were not so well known. So once 280
 we found all of these studies, we started getting a 281
 little more confidence that we are not doing 282
 anything wrong. So we wrote up the results and 283
 submitted it to the *Journal of the American* 284
Statistical Association. But the reviewers and the 285
 editor basically said: “Forget it! It’s not worth 286
 publishing; these results do not make any sense!” 287
 So that was the first (laughs) ... surprise, learning 288
 something of the politics and mentality of acade- 289
 mia; and, having read the book of Thomas Kuhn 290
 (1962), I realised that science does not work the 291
 way that science is supposed to work! They [the 292
 JASA reviewers and editors] didn’t give any 293
 reason... that the methodology was not correct or 294
 this or that. Essentially they said the results do not 295
 support... “our theoretical perceptions” or 296
 biases... so they chose not to publish the paper. 297

298 *Q: That’s one key research idea of yours, com-*
 299 *petitions, empirical comparisons. What are the*
 300 *other major themes that you identify in your*
 301 *research?*

302 A: Well, a major question is when to use a 302
 particular forecasting method? In what situation? 303
 On what kind of data? If I am given a set of data 304
 which method do I select? What happens if the 305
 problem is with short-term, medium-term, long- 306
 term forecasting or whatever? So a good deal of my 307

308 forecasting work has centred around these ques-
 309 tions. However, no matter what was the data, no
 310 matter what was the situation, always it was very
 311 clear that in terms of forecasting accuracy the
 312 simpler methods were doing the same or better than
 313 the sophisticated methods! In addition, we were
 314 finding that combining various methods, some of
 315 them clearly suboptimal, was improving the
 316 forecasting accuracy of individual methods while
 317 the variance was also being reduced. How do you
 318 deal with results like these? ... You are familiar
 319 with what happened when I presented the paper to
 320 the Royal Statistical Society... (Robert laughs).
 321 You, know everybody was attacking me, ... and
 322 basically they were saying “the reason why you get
 323 these results is because you are not a good
 324 statistician.” That’s the reason this new idea came
 325 to my mind, “Let’s do now another competition,
 326 let’s get more series where now the forecasts will
 327 be produced by the best statisticians we can find.”
 328 So that’s what led to the M-Competition.

329 *Q: Did that criticism bother you?*

330 A: Well, of course, if you are young... and I was
 331 still young, just starting and Priestley and Durbin
 332 (well known names, more like “Gods”, or close to
 333 that) ... tell you that your work is not good
 334 because you are not a good statistician, of course it
 335 hurts you! But you know, being a good Greek, I get
 336 stubborn and said “Ok, I am going to prove that
 337 what you are saying is not correct!”. So I organized
 338 the M-Competition, where we basically found the
 339 same results as in Makridakis and Hibon (1979).
 340 Even the person [Allan Andersen] who did the
 341 Box–Jenkins modelling admitted: “My method is
 342 not better than Simple Exponential Smoothing”;
 343 but there was still criticism levelled at M-Compe-
 344 tition. This time critics shifted the arguments to
 345 “the reason why you find these results is because
 346 you carry out the forecasting competitions in a way
 347 that is *blind*. The forecasters do not know the
 348 series, they don’t know what’s happening and the
 349 factors that are affecting the series. That’s the
 350 reason why you find these results.” That’s how I
 351 came to do the M2 Competition (Makridakis et al.,
 352 1993); it constituted 22 case studies, real data,
 353 prepared and presented in real time. And the
 354 researchers participating could get information
 355 from the companies. We ran this study ... and

again we found the same thing! The fact is that
 even these case studies run on a real-time basis
 corroborated the previous results; then the last
 competition was the M3 (Makridakis & Hibon,
 2000), where we increased the number of series,
 we increased the number of methods, we try to deal
 with all the criticisms that have been raised again
 us, we did our best. We got experts to do the
 forecasting... and again the results were the same.
 I don’t know if there is more work to be done on
 this type of competitions. What has pleased me
 enormously is that in the last IIF conference [San
 Antonio] the M-Competition paper was voted as
 the favourite paper published in the field of
 forecasting during the last 25 years. For me this
 was the greatest vindication that my work has
 become accepted by the majority of academics
 after all these years.

*Q: Another research area is your interest in
 strategy and its link to forecasting.*

A: Budget and Strategic forecasting have devel-
 oped as a consequence of how one can make
 forecasting more relevant for business. There has
 been a lot of work done on the level of forecasting
 for inventory control. But there has not been a lot
 of work at a higher level, on budget preparation
 and on strategy! This, in my view, is a logical
 evolution for someone who does statistical work...
 to say: “How can I be more useful to businesses?”
 And at the same time to try to make a little more
 money by consulting; because budget/strategic
 consulting is useful for business at a higher level
 than inventories. So, I started getting involved with
 how research can become more relevant for budget
 and long-term forecasting; how one can foresee the
 consequences, the changes... cyclical and long-
 term changes as they affect current strategic
 decisions. I did some work with several companies
 and in particular for a paper and a whisky company
 where their concerns were “the impact of cycles on
 their revenues and profits” or “how much whisky to
 put in barrels for 12, 15 and/or 20 years later” That
 is how can one predict demand in 12, 15, 20, or
 even 29 years from now?” There are some
 interesting questions there, and some interesting
 concerns. Although there is a tremendous amount
 of uncertainty and risk; these questions are real and
 must be dealt with by identifying long-term trends

404 and changes in the environment and competition.
 405 Moreover, one must also deal with the huge
 406 [unpredictable] cycles! So, the big challenge is
 407 how you can provide useful and relevant informa-
 408 tion to management; how you can persuade them
 409 that our approach/methods can help them improve
 410 their decision-making process and their profitabil-
 411 ity. What is very interesting then, if you look at
 412 decision-makers from the judgmental bias point of
 413 view, is how much people are influenced by recent
 414 events. So, if there is a recession, people think the
 415 recession is going to last forever; if there is a boom,
 416 they think the boom is going to last forever. For
 417 instance, the challenge is to persuade them to do
 418 the opposite! In periods of recession, to consider
 419 the opportunities that would become present during
 420 the forthcoming expansion, and during periods of
 421 expansion to start considering the consequences of
 422 recessions. There are a lot of interesting themes and
 423 maybe at some point, when I get more time... that
 424 I would like to write a book about them. How
 425 much people are influenced [when making strate-
 426 gic decisions] by what has been happening over the
 427 last year or two... or even the last 5 years that from
 428 a historical point of view is a short period of time
 429 that can be influenced a great deal by cyclical
 430 factors.

431 *Q: So, these would be the two core themes that*
 432 *you've explored over your research career?*

433 A: Yes these are the major ones. Another has been
 434 to try to identify major forthcoming changes and
 435 their impact of a firm's strategy? For example
 436 questions of the type "How do I act now to achieve
 437 some competitive advantages in the future? This is
 438 an even more difficult and more interesting
 439 question in terms of strategy. For instance, the
 440 way technology is it going to influence business
 441 firms. One thing is very clear, 'Revolutions' do not
 442 come over a night! They come very slowly and
 443 only when you look back can we call them
 444 revolutions. For me the challenge is how can you
 445 first identify fundamental changes in the long-term
 446 trends and their likely influence on organisations
 447 and societies; and then, how can you persuade
 448 management to start doing something about them.
 449 In my mind, there is no doubt that the Internet is
 450 having and will continue to have profound effects
 451 on every aspect of business! The question is how

452 long is it going to take for these changes to provide
 453 firms with profitable opportunities? As a second
 454 example, there is no doubt in my mind that we are
 455 going to see another period of high inflation like
 456 the 70s. And the question is when is it going to
 457 start? When we are going to see double-digit
 458 inflation again? And I don't think this is unlikely,
 459 although people now dismiss it, because we have
 460 not seen serious inflation for more than 20 years.

461 *Q: Why do you think this is going to happen?*

462 A: It always goes like that! If you look at
 463 economies ... (laughs)... they go from periods
 464 of low inflation to periods of high inflation,
 465 because at some point you get bottlenecks [in the
 466 economy]! And right now China and India and the
 467 other developing countries start having increasing
 468 demand for oil and metals. Recently, there is no
 469 doubt that oil prices have been very low, and if
 470 prices are very low there is no motivation for
 471 expansion, for discovering new supply sources.
 472 Eventually you get into a situation where demand
 473 exceeds supply and you get high prices and
 474 inflation, and that's how we got double digit
 475 inflation in the late 70s and early 80s. I don't
 476 think this is something we should forget! If you put
 477 in a graph what happened from 1950 to 1973 and
 478 what is happening now... you will see that we are
 479 very close to the point that inflation is going to
 480 grow rapidly! Look already what is happening to
 481 the price of oil, they went from \$10 a barrel to
 482 more than \$65 over a period of less than 5 years.
 483 The only question in my mind is not whether we
 484 will have high oil prices and inflation but **when** it
 485 is going to happen?

486 *Q: Do you think we have learned anything?*

487 A: No, I don't think we learned anything! In the
 488 end of the 60s, we were saying... "inflation...
 489 forget it, we won't get high inflation, or recessions
 490 again!" But double-digit inflation and four reces-
 491 sions, including a major one (1973–1975), took
 492 place between 1969 and 1982.

493 *Q: Let's return to the earlier stages of your*
 494 *research career. Who do you think were your*
 495 *intellectual influences?*

496 A: Mmm ... well I don't know, because at
 497 INSEAD there were no senior researchers at the
 498 time I joined. I don't think that there was anybody
 499 who influenced me in terms of my research. The

500 director of research at the time was Claude
501 Faucheux who was somebody who supported me,
502 not through collaborating on research but rather, by
503 protecting me and providing me the time and
504 money. The protection and funding was very
505 important for my research so I feel grateful towards
506 him.

507 *Q: Later on then...*

508 A: Later on, you know the group [who founded the
509 Institute and forecasting journals] ... basically you
510 (Robert Fildes), Carbone (Bob Carbone), Scott ...
511 (Scott Armstrong). Another person who was
512 influential was Robert Hogarth who was teaching
513 at INSEAD at the time, and we did some work that
514 had to do, not directly with forecasting, but with
515 evaluating the accuracy of judgmental forecasts.
516 We published a paper in *Management Science* ...
517 “Forecasting and Planning” (Hogarth & Makridakis,
518 1981a, 1981b). And ... (laughs) ... again we
519 found some very strange results, for example, the
520 average of S&P500 or the Dow–Jones Index (that
521 is a random selection of stocks) was always better
522 than the selection of professional managers that
523 were experts and some were paid six digit salaries
524 to select stocks judgmentally! Which came back to
525 the same idea: very simple models... like the
526 Random Walk (what we call the Naïve 1) that is
527 based on today’s price being the best forecast for
528 the future, was beating professional fund managers.
529 Not all of them of course, but the great majority.

530 *Q: Do you have a favourite forecasting book or a
531 science book in general?*

532 A: For me, Thomas Kuhn’s *The Structure of
533 Scientific Revolutions*... (laughs) ... maybe be-
534 cause I have to a certain extent lived the experience
535 of what he is saying.

536 *Q: You are one of the fathers of the idea that: “A
537 perfect fit does not guarantee an accurate fore-
538 cast.” That seems to be one of the dividing lines
539 separating theoretical statisticians from forecast-
540 ers. Two parts to the question; where did this idea
541 arise? What does distinguish forecasting from the
542 other more theoretical statistical areas?*

543 A: There has been a tremendous amount of
544 amazing theoretical work as to how you can fit a
545 better a model to time series or cross sectional data,
546 e.g., various types of regression; trying to develop
547 different methods to achieve a better fit to

548 available, historical data. From a statistical point
549 of view, it’s clearly interesting work and scientific-
550 ally correct, and, no doubt, it advances statistical
551 knowledge ... But this assumes that history repeats
552 itself! And we know very well from the reality of
553 working with real data, that this is rarely the case!
554 In the future you always get something that is
555 different than in the past. Things that could not be
556 anticipated. This is unavoidable! I am not talking
557 about randomness, which is also a very important
558 component of our data... (Spyros laughs) ... the
559 big problem is that there are always new things,
560 unexpected events, structural changes and so on
561 that cannot be predicted from past patterns or
562 relationships. In my view that’s where the problem
563 lies, and what is surprising is that many statisticians
564 have taken so long to recognise that! That is what
565 we were saying very strongly in the review paper
566 that we published a decade ago (Fildes &
567 Makridakis, 1995). As you remember we had
568 again problems getting it published because main-
569 stream statisticians were not willing to accept the
570 arguments [despite the empirical evidence] that the
571 future will always be different than the past and
572 that even perfect fitting would not result in more
573 accurate forecast. That is the reason that simple
574 methods do very well, and combining improves on
575 the forecasting accuracy of individual methods.
576 This is because it’s averaging the errors. It leads to
577 forecasts that are often better than the ‘best’
578 individual method.

579 *Q: I obviously accept what you say. There always
580 seems to me to be an issue concerned with the fact
581 that, in a way all we forecasters have done is
582 replaced ‘fitting’ with ‘forecasting’. Our selection
583 model is: “What did forecast well – it will forecast
584 well!”*

585 A: Well, our model is: “Let’s not fit too well so that
586 we can forecast better. Let’s fit in a rough way so
587 that we can forecast better;” Then we can discover
588 the basic direction or the basic pattern, rather than
589 over-fitting the past data. By overdoing the fitting
590 part we do so to the detriment of higher forecasting
591 accuracy. So that’s the essence of saying: “I have
592 my simple method”. What a simple method does: it
593 stays very close to the basic pattern. What a
594 sophisticated method does? It tries to identify a
595 pattern by separating it from random noise. But

596 often the pattern being identified does not remain
597 consistent in the future; it changes, increasing the
598 errors during the forecasting phase. We know that
599 with some data, like those used by Newbold and
600 Granger (1974), sophisticated methods proved
601 more accurate; we have found some of these data
602 too in our competitions. But whatever differences
603 exist are small and not consistent over time, in
604 particular when big cyclical or other changes take
605 place.

606 *Q: There is always this issue as to how close*
607 *should we stay to the optimal fit?*

608 A: Well, what is an optimal fit? It's a big question
609 mark. Because in addition to underfitting there is
610 also overfitting. Overfitting is as bad as under-
611 fitting! So, maybe the direction of theoretical work
612 should be to try find the best fit that is going to
613 maximise the forecasting accuracy, rather than that
614 of the model fit! That could be a substantial
615 theoretical contribution.¹ Let us have criteria to
616 be able to determine the "optimal" fit (not under-
617 fitting but also not overfitting available data). What
618 we know is that even if you have a well-behaved
619 series, or it's an aggregate series where there is not
620 much randomness, simple methods can do pretty
621 well in comparison to the method that best fits
622 available data. Simple methods can also identify
623 patterns while not overfitting. Sophisticated meth-
624 ods, on the other hand, do not predict well series
625 that contains a lot of randomness or structural
626 changes.

627 *Q: Of your numerous publications, which is your*
628 *favourite?*

629 A: My favourite publication is the M-competition
630 (Makridakis et al., 1982). It's obvious that this had
631 the highest impact of all of my publications. While
632 the publications I have done in *Management*
633 *Science* might be academically more rewarding,
634 but the impact has been less (apart from Forecast-
635 ing and Planning with Robin Hogarth). Of the
636 books I like a lot "Forecasting, Planning and
637 Strategy" (1990) which has not sold as many
638 copies as my other books but it is intellectually
639 pitched at a higher level; and more rewarding...
640 some of the reviews have been very encouraging.

641 *Q: You started your career in MIS. How much has*
642 *the IT revolution helped in improving forecasting?*

643 A: Well, I think that IT is going to improve
644 forecasting. I think we haven't yet seen the benefits
645 or improvements in forecasting accuracy [arising
646 from IT developments]. In my view, what we are
647 going to need to do is try to take this old idea of
648 Lewandowski (1982) of including special events
649 and special actions; and trying to remove them
650 from the data. Now we have the possibilities of
651 doing that, now that memory and storage is not a
652 problem. Ten years ago methods were constrained
653 in terms of how much data and information could
654 be stored. Now you can keep data on anything you
655 want, in any way you want, we can then go back
656 and extract useful information to forecast more
657 accurately. We have to start keeping multiple
658 dimensions of information concerning what hap-
659 pens to our series. How specific advertising or
660 promotional campaigns affect demand under the
661 specific circumstances they were done? Or how
662 price increases/decreases influence profitability?
663 Regression models don't always work because
664 they attempt to identify "averages". However; there
665 are so many factors involved that you can not
666 isolate them and pick up their **individual** influence
667 through regression. So you have to find out some
668 other ways to single out their impact. I think what
669 Lewandowski was trying to do was impossible at
670 that time but maybe it's now achievable.

671 *Q: Shifting track, we [Robert and Spyros] met in*
672 *Greece in the late 70s. What prompted you to found*
673 *the Institute and Journal of Forecasting?*

674 A: Basically the success of "Forecasting Methods
675 for Management". In the middle 70s forecasting
676 did not exist as a field, making it difficult to
677 publish such a book. Academics and editors were
678 saying: "What field is this?" We were lucky to find
679 a publisher [in Wiley] and an editor who was open-
680 minded. So seeing the book's success, and then
681 visiting companies and seeing their great interest in
682 forecasting, came the idea... "Let's try to do
683 something more, let's create a new field!" And I
684 think to a great extent we succeeded; we are getting
685 a good number of people at the annual Symposia.
686 Other journals have developed in addition to
687 *Journal of Forecasting*,... the *International Jour-*
688 *nal of Forecasting*, the *Journal of Business*

¹ Some approaches to neural networks and data mining combine fit with validation statistics to select an appropriate model.

689 *Forecasting*. There are many books on forecasting
690 being published. So the field has been created.
691 But new developments in the field have slowed
692 down. Some new breakthrough is needed. The
693 direction must be to try to make forecasting more
694 relevant and practical, to get away from model
695 fitting and attempt to optimize post-sample
696 forecasting accuracy.

697 *Q: The Institute, IJF, JoF in many ways have*
698 *succeeded beyond your expectations. But from my*
699 *[Robert's] perspective there has been a fragmen-*
700 *tation in the field. From Philadelphia attracting*
701 *1000 people to Sydney and a very worthy 350. And*
702 *that seems the number we can reasonably expect*
703 *from now on. Any thoughts about the decline?*

704 A: As I said before I think it's time for some
705 breakthrough. We need to find some new ideas,
706 become more useful and relevant to practitioners
707 as well as attract new people, like Kostas, by
708 availing ourselves of new opportunities that would
709 raise forecasting from its current stagnation to
710 something new and exciting. What do we offer
711 right now? We offer some methods and we say:
712 "If you want to do well, here are the simple
713 methods and if you have doubts identifying the
714 best method, try combining." Ok, you do not need
715 much expertise in order to follow this advice, the
716 opportunities for consulting are limited, right?
717 However, if we could come up with something
718 that is going to improve on that, then we are
719 going to generate again a lot of interest. This is
720 what we were doing in Philadelphia (1983) and
721 Quebec (1985). At that time we were doing
722 something that was new and useful! We were
723 integrating the field of forecasting and providing
724 some useful, novel advice to practitioners. Then
725 the newness and utility dissipated ... and we've
726 been trying to live on the same intellectual capital
727 for more than 25 years! What have we added in
728 the last 25 years to make the field more useful
729 and relevant for practitioners? In my view, not
730 much.

731 *Q: On the same theme I (Robert) gather from*
732 *Kostas...there is a Greek saying on choosing*
733 *research collaborators: "If you have to do some-*
734 *thing correctly, you would better do it by yourself";*
735 *Sparing my blushes and libel suits how did you*
736 *choose your collaborators?*

A: Well ... (laughs), I guess part of it is instinct, 737
... because at this time I did not know you 738
(Robert) well, I did not know Scott or Carbone. 739
But given the remaining choices it was a good 740
choice, and in retrospective we made an excellent 741
team; although we had different interests and we 742
went in different directions. In the end, we created 743
the field! From my point of view... I had a book 744
for practitioners and a textbook at that time, then 745
we created the Institute, and two journals. That 746
was a complete package. And I think you, 747
(Robert) were the right person at the time, and 748
Scott was the right person at the time and 749
Carbone, also all four of us contributed a lot to 750
the field each in his own way. 751

Q: (Robert) Obviously we had our agreements and 752
differences over the years about the direction of the 753
field. You, me, Scott, Michele Hibon of course... 754
What makes a successful collaboration for you? 755

A: Well, the end result ... the ultimate success, 756
right? Now, how do you measure success? You 757
measure success in terms of publications... how 758
many papers you get for the journal, how many 759
people come to ISF. Maybe we could have 760
succeeded more – but given the resources and given 761
the time that we spent. ... I think we have succeeded! 762
At least that's the way I see it. We have created 763
enough interest in the field, right? You can see new 764
people using our research, and quoting us and asking 765
questions... you cannot expect more than that... 766
Because you cannot change the old guard, it is the 767
new people who come in the field of forecasting 768
without preconceptions who will move the field in 769
the right direction. I think this is happening, the field 770
is moving forward and I do hope that some 771
breakthrough will come sooner rather than later!!! 772

Q: (Robert laughs) Back to those early years. What 773
was the key event? 774

A: Well the key event was definitely the confer- 775
ences and the journal; the two journals. And you 776
know, I regret we had this fight with Wiley and... 777
we should have been more political and not forced 778
the break from the original journal publisher. That 779
was a big mistake. We were young at this time... 780
and opinionated! 781

Q: (Robert) I think in retrospect having two 782
journals benefits the field, even if we did achieve 783
this by accident (laughs)... 784

- 785 A: Maybe, but look at the *Strategic Management*
786 *Journal*, it has become more established because it
787 is a single journal.
- 788 *Q: You retired from INSEAD about 2000. . . was it?*
789 A: Well, I did not retire, I am actually semi-retired.
790 I have been teaching since 1968 so was I “semi-
791 retired” in 1998; I had 30 years of teaching and
792 research. I think 30 years is a long time to do one
793 job. I wanted a change. So I took this as an
794 opportunity and I said “look I need a big change in
795 my life”. And part of the decision was also that I
796 wanted to raise my children in Greece; and it has
797 turned out well.
- 798 *Q: What do you miss about research?*
799 A: Well, the intellectual stimulation; this is what’s
800 great about research, and the ability or rather the
801 luxury to do nothing and just think (and of course
802 get paid for that)! This is a very important luxury
803 that you don’t realise until you leave it. In business
804 you end with a lot of things to do and no time to
805 think. Looking back, I am not sure if it is better to
806 be in business or be an academic. . . So, I miss
807 doing research! I would like to go back and do
808 more research; not maybe the technical part, but
809 some reflective research. What I think I would like
810 to do now is write a book about forecasting, but not
811 technical forecasting; the topic would be long-term
812 forecasting and how one can deal with change,
813 combining forecasting with strategy.
- 814 *Q: What about teaching. Was that an important*
815 *part of the job?*
816 A: Well, teaching is interesting at the start, but when
817 you have done for the 20th or 30th time; it’s not as
818 exciting. And what becomes exciting is delivering
819 special types of teaching: seminars; talks in compa-
820 nies or conferences; trying to be provocative, trying
821 to be original. Trying to get people to change their
822 mentality through your teaching. This is what’s
823 interesting for me to teach, rather than a course in
824 statistics or forecasting, where themes do not change.
- 825 *Q: Let’s look at how much your earlier forecasting*
826 *ideas now influence your business thinking? How*
827 *often are your forecasting ideas relevant in your*
828 *business life?*
829 A: Not much, not much! Very often you think that
830 people in business are rational and they look at the
831 future; then you realise that their motivation and
832 the way they make decisions depends on many
833 personal and political factors rather than careful
834 consideration of all factors involved and a empha-
835 sis on strategy! (looking disappointed)
- 836 *Q: So, as a chairman, are you in position to make*
837 *things happen?*
838 A: You are in position to influence things. But the
839 influence is relative always. The way that decisions
840 are made. . .very fast, with very little time to think
841 of the future consequences.
- 842 *Q: Yet, you are operating to typical high-tech*
843 *companies, aren’t you?*
844 A: Well, the ideas. . . which direction to go or what to
845 do, what not to do. . . But in a fast moving company,
846 you can see the decisions are made without the
847 luxury of thinking what is going to happen.
- 848 *Q: You wrote that: “A major reason for the*
849 *criticism and discontent facing the field of fore-*
850 *casting has been wrong expectations from the*
851 *users” (Makridakis, Wheelwright, & Hyndman,*
852 *1998). Now you are a user, what could you*
853 *reasonably expect from forecasts?*
854 A: Well, the users expect that you provide them
855 with something like a crystal ball; you can see the
856 future and help them. What I was trying to say in
857 these articles is to try to talk to the users of
858 forecasting about the uncertainty of the future and
859 what they can do to deal with this uncertainty.
860 However, people are afraid of the uncertainty; they
861 want to reduce it. The misconceived expectation is
862 that forecasters help to reduce uncertainty by
863 providing more accurate or precise forecasts, while
864 a good forecaster should increase the user’s
865 uncertainty!
- 866 *Q: So, now that you are a chairman, how do you*
867 *deal with uncertainty?*
868 A: Basically trying to have alternative plans when
869 something does not go the way it is supposed to go.
870 Not relying only on one path in case it is not
871 successful. Most of the times companies fail [in
872 achieving their strategic goals]. Thus, what can be
873 done if things go wrong becomes very important?
874 This is not easy, because even in a company where
875 you are a chairman, people think that their
876 understanding of the future is going to be correct.
877 They find themselves threatened if you tell them
878 that: “most of the times plans do not succeed. . .”
879 Often companies fail for reasons that are outside
880 their control! So, it is important to try to be more

- 881 open-minded; to be prepared to do something to 929
 882 minimise the risk, if things do not go as we expect 930
 883 them. 931
 884 *Q: What were the [intellectual] barriers that were 932*
 885 *the hardest to solve? Things that stopped you 933*
 886 *moving ahead?* 934
 887 A: People with different background accepting 935
 888 the empirical findings. And I am talking 936
 889 specifically about a group of people... the more 937
 890 theoretical statisticians; who as good scientists 938
 891 you would have expected to give credit to our 939
 892 empirical findings [from the M-competitions]; 940
 893 they simply rejected them. So that's the biggest 941
 894 shock out of this. We are supposed to be a 942
 895 scientific community... Why object to some- 943
 896 thing that is correct beyond reasonable doubt? 944
 897 But also I must admit that there have also been 945
 898 several prominent exceptions like Keith Ord and 946
 899 Chris Chatfield who after a while have come to 947
 900 accept the results of the competitions and our 948
 901 thinking. 949
 902 *Q: Irregular events or shocks; how close are we 950*
 903 *today to being able to make progress in dealing or 951*
 904 *even forecasting such events?* 952
 905 A: Well the only thing one can do is to try make 953
 906 analogies. Like now that the price of oil is going 954
 907 up, if you take the last time that the price of oil 955
 908 was going up, and try to see what's the 956
 909 appropriate analogy; how much more can it can 957
 910 go up? If you plot these two series together, you 958
 911 can see that there is another 40% increase is 959
 912 possible compared to the 1973 peak. So it won't 960
 913 be surprising if prices rise to \$90 or \$100. But if 961
 914 it is the first time... then there is no way to 962
 915 predict it, right? Apart from trying scenarios that 963
 916 also have their own problems!! 964
 917 *Q: You are not optimistic...* 965
 918 A: About predicting the unexpected? You cannot 966
 919 predict the unexpected, right? 967
 920 *Q: If you had to nominate three major advances in 968*
 921 *business forecasting in the last 25 years what 969*
 922 *would they be...? Not just you, but everyone. We 970*
 923 *had our Nobel prize winners!* 971
 924 A: Maybe what I will say comes from my own 972
 925 biases and experiences... First let's put forward the 973
 926 empirical competitions: "Simple methods do as 974
 927 well or better than sophisticated ones". We cannot 975
 928 predict well because the series have structural 976
 changes. The second [advance] is the idea of
 combining. The third is that although methods do
 not forecast accurately, people do worse than
 methods! Human judgment is worse than our
 simple methods or combinations. It is full of biases
 that result in highly inaccurate forecasts.
Q: Any big ideas out there still to be explored?
 A: Using the power of the computer to make a
 breakthrough in the way we analyse data and use
 such an analysis to improve forecasting. Maybe we
 have to forget completely about model fitting, and
 the idea of using averages, and to concentrate on
 forecasting specific, individual cases by looking at
 similar past situations not just their average as we
 currently do. Another example is how we can get
 more information from our data; for instance an
 outlier can provide us with a lot of information that
 we now ignore or throw away because we have
 this obsession that outliers reduce the value of
R-square.
Q: Anything else?
 A: Try to separate forecasting in terms of short,
 mid and long term. Try to develop different
 approaches for these three different kinds of
 forecasting. I think all three are extremely
 important. On the one hand, we see big
 structural changes, and on the other hand there
 are fantastic similarities. If you analyze the
 behaviour in the big crash of DJIA in 1929
 and what happened to the Nasdaq during the
 dot.com collapse in the early 2000s... and put
 these two series together, in a standardized form,
 one next to the other you discover a phenomenal
 similarity. Maybe there are more analogies like
 these that we can identify to help us predict the
 future more accurately...
*Q: What is next in your career? You mentioned
 already about a new book...*
 A: This book would express my knowledge and
 experience in forecasting to help people face the
 future in a more realistic and rational manner. Most
 books deal with success stories, few people are
 interested in failures. Thus a book explaining
 reality as it is (with both its successes and failures)
 and setting the limits to our predictability would be
 an interesting and useful one.
*Q: It is common for Greeks to use epilogues or
 epigrams when authoring. You avoid these in your*

977 *best seller. Can you offer us one now to capture the*
 978 *future of forecasting?*

979 A: (laughs)... After having thought a great deal on
 980 this question, my epigram is:

981

982 **“The Future is not what it used to be”**

983

984 May be if we accept this epigram as the foundation
 985 of forecasting we could come up with the break-
 986 through that we need to raise the field to a new level
 987 and make it more useful and relevant.

988

989 *Q: OK, Thanks for this interview, Spyros*

990

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