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SIGACT NEWS

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Editor's Letter

It appears that my description of the *SIGACT News* submission deadline in the Editor's Letter of the October 1993 issue (Vol. 24, No. 3) contained an error. The issue named for month m was supposed to have a submission deadline of the first day of month $m - 2$, not $m - 1$ as stated. *However*, circumstances have changed in such a way that my error is not an error at all. It's not often that the world changes to accommodate my mistakes! ACM HQ has informed me that we should rename our issues to March, June, September, and December if we wish to keep our second class mail license. Keeping that license is a good thing to do because it reduces our mailing costs by about a third, and hence keeps your membership dues down. You will note that the previous issue (Vol. 24, No. 4) was named December 1993 in accordance with this new policy.

As usual, this issue contains some very interesting contributions from members of the theoretical computer science community. There are far too many to mention individually, but I would like to take the time to spotlight a few of them. The minutes of the FOCS business meeting, recorded assiduously by Peter Gemmell, contain much interesting news and information. There is also a thoughtful piece from Jozaf Gruska on the newly formed IFIP Specialist Group on Foundations of Computer Science. Lane Hemaspaandra's Complexity Theory Column contains the second half of Oded Goldreich's interesting and informative guest column on proof systems. Joseph O'Rourke's Computational Geometry is the 22nd in the series. This, Jeff Salowe's Theory Calendar, and Rocky Ross' Education Forum are the most frequent of our regularly appearing items, and are very much appreciated. And this year we have the STOC preliminary program due to the tireless efforts of Gilles Brassard. To these people and all of those who made this issue possible, thanks for all of your work!

Ian Parberry

Transitions

Changes of professional address to be listed in the Transitions section of *SIGACT News* should be sent by electronic mail to the Editor, ian@ponder.csci.unt.edu.

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Quarterly Quote

If A equals success, then the formula is: $A = X + Y + Z$. X is work. Y is play. Z is keep your mouth shut.

— Albert Einstein

Technical Committee on the
Mathematical Foundations of Computing
Minutes of the 34th Annual FOCS Business Meeting
November 3 1993, Palo Alto, CA

The business meeting of the 34th Annual Foundations of Computer Science conference was called to order at 9pm on Wednesday, November 3, 1993, Technical Committee Chair Allan Borodin presiding. After welcoming attendees (and assuring them that the meeting would proceed as quickly as possible), Allan asked for a motion to approve the minutes prepared by Pete Gemmell for the FOCS 92 business meeting in Pittsburg. After one such motion and some seconds, the minutes were approved.

Allan then introduced Janos Simon who discussed plans for an electronic theoretical computer science journal. It will be published on line by the MIT press and will be accessible via most network connections. It will have a board of referees and Janos expects a six week turnaround time for submitted papers. He said that all submissions should be in the LaTex format because this allows for easy annotations. The artificial intelligence community already has a journal similar to this and it has proved to be a success. Janos encourages people to submit papers to this journal which he hopes will be widely accepted. When asked for a name for the journal, he jokingly said: "The Chicago Journal of Theoretical Computer Science."

Allan thanked Janos and introduced Leo Guibas, the program committee chair. Leo presented a slide with the names of the program committee members, thanking them for a job well done and mentioning that there were one or two more people than usual. He then presented a statistical breakdown of the papers submitted. Two hundred twenty five papers were submitted, some several times, two were withdrawn, and 74 were accepted. The maximum acceptance rate by area was algebra which had 5 of 9 papers accepted. The areas with the lowest rates of acceptance were complexity (7 of 32), logic (4 of 20) , and miscellaneous (0 of 10). The area with the greatest number of submissions was combinatorial algorithms with 56. Leo then presented a slide depicting the acceptances and non-acceptances in order of arrival. The distribution of the accepted papers seemed fairly uniform relative to arrival time. Leo said that some papers arrived as early as 6 weeks before the deadline while many others had to be hand delivered. He mentioned that he was carrying around so many papers in the final couple days that he developed tired arm muscles.

Leo received a round of applause for his work and then Allan spoke about the Machtey award. This year's award, which is given annually to the best FOCS paper authored completely by students, was given to Pascal Koiran for "A Weak Version of the Blum, Schub, and Smale model." Unfortunately, Pascal was not present to receive a handsome cardboard commemorative plaque (written by Leo Guibas). However, he will receive a prize of $500, which according to Allan is the now standard (paid by IEEE) amount which future winners also will receive.

The local arrangements chair, Andrei Broder, spoke next, first presenting a trophy of 100 best quality paper clips to Pascal Koiran (in abstentia) for having the most stubborn bureaucracy of all institutions with which he dealt. He sent them numerous letters asking for Pascal Koiran's fees to be paid and each letter was returned for a different reason ("this

is not a bill," "this bill has no billing number", etc). At the time of the business meeting, they still have not paid. Andrei next discussed the conference registration, noting that attendance was down from last year's 390. There were 82 students and 195 non-students attending FOCS 93, or 279 people overall. Someone pointed out that had we known how to add, attendance would have been even worse. Andrei also pointed out that there were plenty of extra proceedings available and urged people to buy extras, suggesting using them as presents and conversation pieces. He noted that after the conference, they would cost more than $100 and, because they might be unavailable on the afternoon of the last day of the conference, we should buy early. After Andrei presented a map and directions to the next day's banquet (which had great food), Someone asked about the availability of internet access at the conference site. Andrei explained that the organizers would have had to rent business lines for a whole month and hence it was financially impractical.

Allan Borodin pointed out that Andrei had performed "the job with the most headaches" admirably and the audience clapped its appreciation.

Next, Allan presented more awards. Rao Kosaraju was made an IEEE fellow for his work in parallel algorithms, John Reif was made an IEEE fellow for his work in parallel algorithms, Jeff Vitter was made an IEEE fellow for his work in sorting, searching, and the design and analysis of combinatorial algorithms. David Johnson took photos of each receiving his award. Allan then mentioned that, as many already knew, Juris Hartmanis and Richard Stearns had received the Turing award this year for their work in computational complexity. Allan said that, in general, many people feel that there are not enough awards in the field of computer theory and people are contemplating coming up with more, perhaps an award recognizing distinguished careers.

Allan introduced David Johnson next to speak about the SIGACT/EATCS prize for best journal article published in theoretical computer science. This year's award was presented at the FCRC conference in San Diego jointly to Babai and Moran and to Goldwasser, Micali, and Rackoff for their papers introducing the concept of interactive proof. David discussed the requirements of the prize. Only journal papers will be considered; this is extra incentive for authors to submit their works to journals. For the 1994 prize, which is to presented at ICALP, a paper must appear somewhere in the years 1988 thru 1993. A prize of $5000 is put up jointly by PWS Publishers and International Thomson Publishing. The prize committee includes Cook, Karp, Milner, van Leeuwen, Rabin, and Salomaa (chair). To be considered, a paper needs 2 nominations and the deadline is Nov. 30, 1993. Nominations may be sent directly to the chair at asalomaa@kontu.utu.fi. A nomination requires a statement as to why the nominator believes the paper to be important. Would-be nominators may simply send in the name of the paper or a full nomination. People who simply send in the name of the paper will be contacted for a full nomination in case the committee has not received 2 full nominations for that paper. Nominated papers should have to do with computer theory broadly defined, including but not limited to the topics covered at such meetings as ICALP, STOC, FOCS, STRUCTURES, CRYPTO,SPAA, and LICS.

Allan thanked David Johnson and introduced Shafi Goldwasser, chair of the FOCS 94 program committee. There was a brief discussion of the dates for FOCS 94 which Allan postponed so as to allow for discussion of program committee issues. Allan then brought up another important issue: what to do about people getting the final version of their accepted

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papers in late. He pointed out that the organizers have a very tight schedule for sending the proceedings to the printers and that because many people cut it very close, the whole printing is put in jeopardy. He unveiled two proposals: 1) There would be a strict deadline for final submissions. Those papers which are not in by that date are considered withdrawn and will not appear in the proceedings or be presented at the conference. 2) If the final version of the paper does not arrive on time, the initial submission of the paper will appear in the proceedings. Allan asked for feedback from the audience. Someone said that a few years ago, initial submissions had the same apparently flexible deadline that final admissions do now and that there were also similar problems with lateness. He pointed out that when the initial submission deadline was made firm, the problems disappeared. He suggested that therefore option (1) seemed good and that the firm deadline for final submissions could be advertised in the conference call for papers. Howard Karloff then asked what would happen if the authors sent it in the day it was due and therefore the paper arrived one day late. Maria Klawe next pointed out that the current system may not be fair in that it may allow for a famous name to get away with handing their final submission in a few days late whereas a graduate student from a little known university wouldn't have that luxury. Leslie Goldberg said that it's silly to demand a final version of the paper in two columns when some people would be quite content letting their initial one-column submission stand as is. Christos Papadimitriou said that under option (2) we would see more and more of the initial and possibly rough abstracts in the final proceedings. Next someone said that the idea of famous people goofing off and purposefully abusing the deadline is a myth. Allan asked for a show of hands to get a sense of what people's feelings were. Someone asked if this constituted a vote. Allan then pointed out that the executive might sometimes need to make a last minute switch in plans and be unable to bring the voting body back. Therefore, the vote would not be absolutely binding, although he would do his best to honor the voters' wishes. Someone then proposed an amendment: to allow the submissions to be made electronically. He suggested that the proposals would be a hardship for those in Israel who are at the mercy of the unreliable local mail system. Someone else pointed out that submissions from Israel are made via private reliable services and that a submitter from a foreign country could always have a friend in the US mail their paper for them. Also, Allan said that guaranteed reliable electronic submissions was also problematic. He then asked Andrei Broder how many papers arrived late this year. Andrei responded that at the time of the deadline, only 50% of the submissions were on hand. Two days later, this fraction had increased to 80% (including none of those from MIT). The last papers arrived 6-7 days late. Following this description, there was a vote between Allan's two proposals and proposal (1), for a strict deadline after which papers would be considered withdrawn, had a clear majority.

Sorin Istrail spoke next about FOCS 94. He had worked hard to secure the best possible deal at the hotels and for travel. Continental, the official airline of FOCS 94, has offered to provide one free ticket for every 25 which we purchase and also will give a 40% discount on the program committee's travel, thus saving attendees on an expense which figures into the registration fees. Sandia National Labs will provide some money to defray students' expenses. The hotels are the Eldorado (where the talks will be held and where most attendees will stay) and the Hilton (right across the street, where the overflow will stay). They will provide one free room for every 40 which we purchase. For those who wish to bring children, there

will be professional babysitting available. Sorin next showed slides of the city and the hotels where we will stay. Sante Fe has been voted the most popular travel destination in the world in a poll done by a major travel magazine in 1992. The city, which is the 2nd oldest in the US, is reknown for its artists and for its beauty. In addition to the conference, there will be many other activities available to attendees. These include rafting, mountain biking, hiking, golf ("most scenic golf in the world"), possibly skiing, and others. For a complete description, please contact Sorin at scistrai@cs.sandia.gov.

A discussion ensued on the topic of Halloween. The planned dates for FOCS 94 were Monday-Tuesday-Wednesday, Oct. 31 thru Nov. 2. Some members of the audience pointed out that several years ago, a FOCS business meeting had voted to avoid ever holding FOCS over Halloween because some attendees would like to stay at home with their children on this date. Sorin said that he had not been aware of this vote and apparently the people on the technical committee with whom he had discussed the dates had not been aware of the vote either. David Johnson asked what the possibilities were for moving the conference back one week. Sorin replied that it was probably not possible. Maria Klawe said that if the conference is over Halloween, then she will not be able to attend. Allan Borodin promised that organizers will try to be sensitive to this issue in the future and also that we will do what we can about acommodating people for FOCS 94. He further promised that if FOCS 94 is held over Halloween, then he would dress up for the occasion. Alok Aggarwal asked how far we should go to satisfy everyone's constraints, pointing out that this is very difficult. Finally, Shafi Goldwasser suggested that we should do what we can about changing the dates for FOCS 94, avoid Halloween in the future, and have a big Halloween party in Sante Fe if we can't change next year's dates. One week after the meeting, after renegotiating with the hotel, four possible dates were provided to us. One hundred and two people voted in a theory net poll and the dates Nov. 20 - 22 ended up a clear winner.

Allan Borodin and Alok Aggarwal pointed out that no one has yet put up a formal bid for FOCS 95. They urged anyone who is interested to talk with either Alok or Allan.

Larry Larmore spoke next about STOC 95 which is to be held in Las Vegas, Nevada. The host institution will be the University of Nevada, Las Vegas. Larry said that the organizers will absolutely avoid conflicts with Holy Week (April 9 - 15), Easter (April 16) and Passover (April 15 - 22). The tentative dates are April 24-26, Mon-Wed, with a welcoming reception April 23. He said that in Las Vegas at the time of the conference, we can expect temperatures to be in the 60's at night and in the 80's during the day. Larry then drew our attention to the issue of choosing the appropriate hotel at which to hold the conference. He offered two specific suggestions. The first is to hold STOC at Caesar's Palace which charges $124 per room per night, the second to hold STOC at the MGM Grand (about a mile further South along the Strip) which charges $75 per night. However, since the meeting, the location has been fixed at the Tropicana Island Tower, which has no casino, but is across the street from the MGM Grand. Room cost will be about $75 per night for one or two, but across the street at the Excalibur, a family-oriented medieval themed hotel, rooms are only $45 for up to 4 persons midweek in April. The Tropicana is connected by Skywalks to both the Excalibur and the MGM Grand, to avoid having to cross heavy traffic. Even cheaper rooms are available at several smaller hotels within a one mile radius. The airport is less than 2 miles away, and is connected by a shuttle for only $4.

The Island Tower is connected to the Main Tower by a moving walkway over the Tropical Lagoon area, which features a waterfall, pools, and tables to sit and prove theorems at. The convention area is far from the nearest casino, in fact, guests at the Island tower can move between their rooms, the talks, and the parking lot, without passing through any casino.

The Excalibur features free family-oriented shows on the Jester Stage at the Medieval Village level every half-hour from 10AM to 10PM, a twice-nightly dinner show for $25 featuring jousting in King Arthur's arena (you eat with your fingers, medieval style), an entire floor devoted to non-gambling games, and an all-you-can-eat buffet at dinner time for only $5. The MGM Grand features a 33 acre theme park. The Luxor (Egyptian theme) is shaped like a pyramid, just South of the Excalibur and connected by a Skytrain, and features a three-part "Search for the Obelisk" adventure which uses virtual reality. The Hacienda, with its famous $7 buffet (which includes prime rib and wine) is the next hotel to the South.

Other attractions include the Mirage, which features a volcano eruption every 15 minutes at night, and Treasure Island, which features a full-scale battle between a pirate ship and a British man-o'war every 90 minutes – both are located just over a mile North of the Tropicana, along the Strip. The volcano and pirate battle are free. The Mirage Buffet, all you can eat for $10, is legendary for its hard-to-believe quality at that price.

There will also be opportunities for excursions to Lake Mead and the Grand Canyon.

Carl Smith spoke next about FOCS 96 and the possibility of holding it in Burlington, Vermont. He needed to know the community's opinion at this early date because the location is wildly popular in the autumn-time. Warm days and cool nights cause the trees to turn lovely colors and the hotels tend to be booked up by tree-watchers. Burlington is about $1\frac{1}{2}$ hours drive from Montreal and $3\frac{1}{2}$ hours drive from Boston. Carl said that 60 planes land there per day, 10 of which are jets. There are direct connections from Chicago, Pittsburg, and Newark. We would be staying in the Radisson Hotel, of which he showed us a nice slide picture. The Radisson would charge us $95 for single or double occupancy. Half the rooms have a view of the Adairondack mountains and Lake Champlain, and some of the other half have a view of the Green mountains. The banquet would be a variant on the theme of recent years. In L.A., it took place on a boat at a dock. In Seattle, the attendees took a boat to the banquet. In Burlington, we would enjoy dinner aboard a beautiful historic boat which is on dry land. This boat is part of a museum 15 miles south of the hotel. The museum would be reserved for the banquet and there are many other sights to see there. Allan then asked for a show of hands on whether to accept the bid and plan for FOCS 96 there and clear majority gave Carl mandate to go ahead with the plans. The tentative dates for the conference were Oct. 21-23. However, some time after the business meeting, Carl has called the hotel and moved the dates to one week earlier in October because of the situation with the Israeli school year.

Allan and Andrei then put another plug in to encourage a FOCS 95 bid and mentioned that they do have some unnamed leads.

Allan brought up the topic of elections for chairman of the technical committee. He is the last in a line of hand picked successors, and next year, there will be an election for the post. The only issue that remains to be worked out is to reach an understanding with IEEE that will allow for a broad vote, to include perhaps everyone who attends LICS, STRUCTURES, or FOCS.

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John Mitchell described this year's LICS conference which involved a nice excursion between Bordeaux and the wine country.

Steve Mahaney reported that Structures this year in San Diego had the usual number of submitted papers, but that attendance was up 30%, perhaps because of its being part of the FCRC. Next June, Structures will be held in Amsterdam. Steve pointed out that the call for papers includes more areas than one might think and encouraged people to send submissions.

Allan thanked John and Steve and (following a suggestion by Christos Papadimitiou) brought up the subject of how could the conferences and program committees be of help in guiding the field of computer theory. In particular, he asked how they could address the problem that many current graduates are having trouble finding jobs in academia. Christos Papadimitriou got up and said that CS theory is facing a crisis situation and that it would be appropriate to empower the program committees of STOC and FOCS to try to do what they can to help. David Johnson suggested the possibility of inviting a panel of people who have gone into industry to come to STOC or FOCS and speak about what they are doing and how they like it. Maria Klawe said that she had been invited to give a talk at a meeting of 300-400 math department chairs about what computer science departments can do for math departments. She said she learned at this meeting that Texas A&M university may hire 3 or 4 computational combinatorialists in the near future. Maria offered to send copies of the slides of her 45 minute talk to whomever is interested. She also suggested inviting people from other fields to come to the CS theory conferences to give similar talks. Allen Sellman said that because the issue of too many applicants for too few jobs is a long range issue, it is not in the realm of the program committee's mission. He suggested that the Steering committee is more suited for the task and also said there is a need for a survey to learn the true state of the situation. Baruch Auerbach said that the program committee should use more judgement in deciding what papers should be accepted and consider more carefully what questions are interesting. Carl Smith said that SIGACT has a long range planning committee, consisting of Leighton, Blum, and others, who might gather data and get new approaches to CS theory's troubles. Some one suggested getting CS departments and industry to come to the conferences with possible hiring information. Allan urged anyone with a suggestion to forward their idea to either himself or Shafi Goldwasser.

The final phase of the meeting commenced as Allan introduced Dana Richards to give his NSF report. Dana started by saying that, while this year's (FY93) $6.5 million budget was flat compared with last year's $6.5 million budget , the NSF received an overall 8.0% increase for FY94. If his program grows proportionally, that will mean a $7.0 million budget in FY94, although he said that he has already committed a lot of money for FY94. He said that this year's grant requests had a 40% acceptance rate and that the average new award was $49,000 per principal investigator per year. Dana said that there were three new NYI's: Blum, Goldman, and Motwani. He then put up a slide containing language in a bill which had recently appeared before a senate committee. While this bill did not pass, the gist of it was that the NSF would have been required to spend at least 60% of its budget on "Strategic Research" and not lie about it. He went on to say that the 60% figure would not have applied to his program, but that he and we might feel pressure. He urged us to give him some suggestions of what theory of computation has done for the US and the world

in the past few years. Dana showed a slide depicting some of the many changes that have happened since the last FOCS: a new President (from whom Dana Richards is only 3 steps away!), new science advisors, a new Foundation director (Neal Lane), a new acting CISE director, a new acting CCR director, and 3 different TOC program assistants. He then told us about the Mathematical Sciences Postdoctoral Industrial Research Fellowship which is being sponsored by a branch of the NSF different than his own. The application deadline is Dec. 13. He mentioned that 2 month awards may be back in the near future. Lastly, he said the chances are looking good for a program in applied algorithms. He has seed money for several grants in FY94 and there is a good chance for a general call for proposals in FY95.

Allan thanked Dana for his informative report and, after checking that there was no other business, Allan adjourned the meeting.

Pete Gemmell Recording Secretary psgemme@cs.sandia.gov

IFIP Specialist Group on Foundations of Computer Science

Jozef Gruska

1. This is to bring updated information about IFIP Specialist Group on Foundations of Computer Science. About its aims, potentials, results and especially about some of its strategic problems solution of which require to create a consensus within TCS community and to gain support of this community. Since there seems to be too small awareness of these problems and too much misunderstandings around them I will discuss some key points in more details.

   The aim of SGFCS has been to use IFIP framework to support worldwide development of TCS. SGFCS has had some successes along this line, but there are now strategic decisions to be taken and not easy problems to be solved, that actually require consensus, willingnes and support of the whole TCS community, in order SGFCS initiative would be so successful as it could and some, including me, believe it should. The main aim of this article is to make TCS community to be aware of these problems so everybody can, and hopefully some will, express positions and make suggestions. To begin with some (historical) facts seem to be of relevance.

2. In spite of the fact that IFIP has been established (1960) more than 33 years ago, to federate CS-associations from all over the world, and to care world-wide for the development of computer science, through technical committees for the main areas of CS (twelve now) and their working groups, the first explicit TCS body in IFIP, a *provisional Specialist Group on Foundations of Computer Science,* has been established only in 1989 and even then not without an opposition. (At this point it is important to emphasize that the establishment of SGFCS within IFIP did not have neither original nor ultimate aim to meet first of all IFIP needs. On the contrary, SGFCS has been pushed for by those believing that IFIP environment/umbrella could be used to do things profitable for TCS.)

   The reason behind such a lack of interest of IFIP in TCS are quite interesting and worth to pay attention even now. There has been for years an opposition within IFIP to the idea of having a separate body (technical committee) for theory. There have been three reasonings behind. The first and the original one has been based on a believe of the many of the IFIP leaders that computer science is so strongly technology and application oriented that theory people and developments should not be seen as a separate part of computer science but they should be, within IFIP bodies at least, distributed and attached to particular technology and application area oriented technical committees and working groups. The second reason has been, for years, a too narrow scope of what has been called TCS - the existing TCS has not been seen as the much needed theoretical base by many technology and application oriented areas. The third reason has been related to a believe of some part of CS community, also

shared by some theoreticians, that theoretical computer science is a part of theory of programming and its development within IFIP should be taken care for by a working group/groups within (a technical committee for) programming.

It is important to realize that these views of IFIP leadership in the past have been only a reflection of the views shared by a large part of computer science community and also by many of those outside of the field. It seems also important to realize that such views are far from being completely a past in spite of very significant scientific successes of theoretical computer science in the last decades and a very good academic reputations of its top scientists. Theory standing is still far from what it could and should be - both with respect to the needs of the whole field and also with respect to the achievements and potential of theory. It seems also far from reasonable to ignore such views. They have significant influence on availability of positions, on the recognition of TCS and its members, on curricula design, and on the distribution of supports and fundings within CS-community.

3. History will certainly judge present developments in TCS solely on its lasting scientific achievements. For the current development of theory, and also for its overall support seems to me, however, very important its overall standing and visibility within the whole computer science community and also within the overall science and technology community. From this point of view the establishment of the **permanent IFIP Specialist Group on Foundations of Computer Science**, in 1992, after four years of work, activities, reasoning and arguing, could be seen as a significant step. TCS has been by this step accepted by CS-community at large as its important part and got an opportunity, within IFIP framework, in cooperation and competition with other areas to get visibility and to demonstrate its strength, importance and contributions. It depends now on TCS community and its leadership whether and how it will be willing and able to make a use of it. TCS-community has therefore search for ways to change this situation and it has to do that first of all there where an explicit competition between various areas of computer science exists and where the results of such a competition are visible both inside and outside of CS-community.

4. In order to make SGFCS initiative really successful some strategical decisions concerning the overall organization of TCS would be needed to be taken and successfully implemented for which there does not seem to be enough consensus within TCS community at this moment. They are connected with the following basic questions: Do we really need a (new) world-wide oriented TCS- body/initiative such as IFIP SGFCS? (Are the existing regional organizations such as EATCS, SIGACT, SIGAL... ,that also have many members and much influence far beyond their geographical borders, not enough - especially when funding is increasingly national or regional? And even if they do not cover all is the rest really worth of much effort?) And even if the answer is yes, a new basic question comes. Is IFIP the best framework of doing that? And even if one comes to a positive answer also to the last question another ones arise: How to do that? How to make IFIP SGFCS really effective? What should be its aims, scope and methods? Let us discuss now these problems.

World-wide oriented science/technology organizations seem to be in general in some crises, regional ones seem more to flower. Is that, however, an indication that they are not needed or only an indication that, because of the changing role of science and technology, because of new communication and transportation possibilities, and because of increasingly growing technological/scientific impact of some of economically fast growing recently-yet-developing countries, these organizations have only to redefine their aims and scope, to enlarge space for picking up leadership, and to modernize strategies and methods? It seems to me that in spite of all visible tendencies for regionalization, integration is certainly one of the main and even stronger phenomena of the coming era and therefore all these international scientific bodies have only to adjust to new times and needs in order to be again needed and successful. (One small example: International Mathematical Union has succeeded, with UNESCO support, to declare the year 2000 as the year of mathematics. Is that or it is not a worth-while strategical step for mathematics? Wouldn't it be nice to have, for example, the year 2001 to be a year of informatics? Can one achieve it also without having firm grounds in the worldwide science scene?) This reasoning may me to believe that for TCS it is worth-while to try to have body operating on the world-wide scale and being also formally seen that way. Of course, the one that has not conflicting or competing aims with already successful regional organizations.

Another basic question is whether IFIP is the best environment to do that for TCS? Two other alternatives seem to be to act within International Mathematical Union or to set up a completely new international organization. Let us discuss now shortly these three alternatives. IFIP seems to be currently firmly grounded on the international science scene and also works hard to be the member of ICSU (International Council of Scientific Unions) what is far from a trivial problem. Moreover, of a special importance for TCS seems to be to get desirable visibility and recognition not only outside CS-community but especially inside of it, in competition and cooperation with other areas of CS. For that IFIP seems to be at the world scale far the best from what is currently available. There is also one another special reason why IFIP environment can be useful for TCS. It is a natural place for contacts between representatives of specific areas of CS that meet in principle at least twice a year and can therefore develop both understanding of problems in other areas and also personal contacts that are desirable and helpful to support cooperation and joint activities between TCS and other areas of CS. In addition, and this seems to me to be another crucial point, there does not seem to be anything within IFIP that would prevent sufficiently independent development of TCS within it. All that hardly makes International Mathematical Union as a strong alternative and minimizes needs to go for a separate way to create new organization - what seems, moreover, currently practically little feasible. To summarize, the IFIP environment seems currently certainly one worth to pay attention - especially because it seems that quite a bit can be achieved within it with relatively small effort.

5. At this point it seems to be necessary to say more about IFIP and possibilities it offers for TCS, because a large part of TCS community knows little about it and another large part has not very positive views of IFIP.

IFIP used to play an important role in the development of the field in 60-ties and 70-ties and IFIP Congresses have certainly been the best and most prestiges place to give an invited talk for a theoretician. This has slowly changed. It is not easy to give a complete analysis of what went wrong. On one side one can say that IFIP is such as are its member organizations and as it is the whole field. With the rapid development of the depth and the breadth of its science base, technology and especially applications, the overall number, positions and influence of computer scientists and engineers within the leadership of these organizations used to decline. Slowly IFIP started to be accused by academical community to be too little academical and by not academical community to be too much academical. Moreover, IFIP leaders did not have always enough vision, (but who had?) to anticipate correctly the overall perspectives of new developments and therefore several currently very active areas of computer science did not get space they required and needed within IFIP and therefore have set up their own, now successful, organizations. One of the consequences: participation at IFIP Congresses and their prestige went sharply down. All that has been also much behind the above mentioned views that it could be perhaps better for TCS to set up its own world-wide organization than to be involved within (current) IFIP. However, another reason why this may not be the best idea is that IFIP keeps (significantly) changing.

There used to be criticism of IFIP that in its most powerful bodies, such as GA, Council or technical committees, decisions are made solely by country representatives and many, or at least some, of them have little to do with computer science and engineering. This has been also seen as one important factor causing that IFIP went down in its performance, impacts and prestige. This has, however, already changed. Chairpersons of technical committees and specialist groups have now a very significant say in GA and Council and chairperson of working groups in technical committees. Moreover, the independence of technical committees and working groups has been increased. Also UN-principle followed by IFIP - one man per a country in general assembly and also in its technical committees - has also been seen negatively by many. As an obstacle that prevents top scientists to have interest to be on such bodies and also for scientifically stronger countries to have a real concern for IFIP. Specialist Group on Foundations of Computer Science, that has formally the same standing as technical committees, is a first and important example that also in this respect there are significant changes going on in IFIP. Members of SGFCS, formally Specialist Group SG 14, are not appointed by information processing societies representing member countries, and do not therefore represent them, but are chosen by TCS community itself and there is no other restriction on its number from one country as that given by limit on the total number of members 40-60, set by members of SGFCS itself, and by the desire that membership should represent the field on the world-wide scale. These two recent changes are of large importance for seeing future of IFIP and activities of TCS within it.

SGFCS has currently the following members: G. Ausiello (I), G. Berry (F), A. Bertoni (I), R. Book (USA), W. Brauer (D), J. Brzozowski (CDN), R. G. Bukharajev (R), L. Budach (D), R. M. Burstal (GB), S. A. Cook (CDN), J. de Bakker (NL), J. Diaz (E), F. Gecseg (H), J. Gruska (SK) - chairman, J. Hartmanis (USA), J. Heintz (RA), C.

A. R. Hoare (GB), J. Hopcroft (USA), G. Hotz (D), T. Ito (J), D. S. Johnson (USA), H. Jürgensen (CDN), R. M. Karp (USA), M. Klawe (CDN), V. E. Kotov (Russia), R. Milner (GB), U. Montanari (I), M. Nivat (F), A. Paz (IZ), G. Rozenberg (NL), J. Sakarovitch (F), A. Salomaa (SF), B. Sendov (BG), E. Shamir (IZ), I. Simon (BR), J. Staples (AUS), T. Toffoli (USA), J. Traub (USA), E. Tyugu (S), L. G. Valiant (USA), P. van Emde Boas (NL), J. van Leeuwen (NL), S. Winograd (USA), D. Wood (CDN).

Scientific reputation of members of the group has been an important factor in establishing SGFCS as a permanent specialist group.

This membership has been formed by an iterative process starting with a small group active in establishing SGFCS and suggesting other members. In the case of bodies established by such a selfestablishing processes an appointment algorithm and its application is certainly a touchy issue. Currently a mechanism has been set up to update regularly SGFCS membership. Moreover, it has been agreed that chairpersons of the main TCS organizations, such as SIGACT, should be invited to be ex officio members of SGFCS as well as its working group chairpersons. Other suggestions how to form and update SGFCS membership are certainly welcomed.

6. Currently there are only three working groups within IFIP SG'14. WG 14.1 "Continuous algorithms and complexity" chaired by J. Traub, WG 14.2 "Descriptional complexity" chaired by E.Pednault, and WG 14.3 "Foundations of data specifications" chaired by H.-J. Kreowski. (Some other proposals for working groups are under negotiations.) Especially WG 14.1 is very active in organizing successful meetings, established a network,...

In spite of importance of all these three areas such a list of working groups for TCS is, without doubts, very far from being representative of the field and from what is desirable, needed and possible. To change and improve that seems to be an important but far from being an easy problem.

SGFCS and its working groups are listed in all major IFIP materials and as such contribute to how TCS is seen by many outside of theoretical computer science and also outside of CS. It is certainly not completely clear how big impact an impressive or an under-representative list of working groups in SGFCS (and the same for their activities) may and will have for the overall visibility and prestige of TCS. One can, however, expect that in this period of increasing competitiveness between various areas of science and technology, and within particular areas including CS, for resources it may play a role, it may contribute to a correct view or underestimation of TCS. Certainly views of TCS by many (or at least some) could be quite different would the list of very active working groups contain for example such groups as (in alphabetic order): automata theory, cellular automata, computational geometry, computational logic, computer science and biology, computer science and physics, concurrency theory, cryptography and security theory design and analysis of algorithms and data structures, structural complexity theory, symbolic computation, theoretical computer architecture, theory of parallel and distributed computing, ...to mention some. In all these areas there is a significant amount of important research going on, quite a bit of conferencing

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and publishing and many of these areas are in some less or more formal way already organized - for example around a regular conference, around a journal or around both. One can say that in these and other areas informal working groups exist - they are only not visible much outside of their own circle.

7. Under the assumption that such an initiative as SGFCS is important for TCS community, it seems therefore much desirable, and also for other reasons than those mentioned above, to have in IFIP a really representative structure of working groups for TCS. Practically, however, there seems currently not to be too much awareness of this problem within TCS community and, moreover there is not too much consensus concerning how to proceed to achieve that. For new areas of TCS and those areas not yet organizationally settled an SGFCS working group seems certainly a reasonable/acceptable alternative. Problem is, however, that for the whole SGFCS initiative to be as much successful as desirable it would be needed to establish IFIP working groups also in already well established areas and it is far from being clear how to do that once one takes as an inevitable assumption a consensus of the particular scientific community. Though many agree on a very general level that this could be desirable once a concrete step is to be made several more or less rational and irrational issues come up as well as various misunderstandings or misinformation concerning of what it means to be an IFIP or SGFCS working group. Some of them:

Funding is increasingly local or regional and this is certainly an important point. There seems to be a feeling, among existing informal or regional "working groups" that by being seen as attached to a world-wide organization the access to national or regional money can be less successful. Moreover, many of these "working groups" seem to be quite satisfied with having well established regional organizations as ACM; IEEE, EATCS, SIGACT...as some umbrella and a source of an organizational support and financial backing. The existence of various ESPRIT "working groups" is another important factor - they not only meet current needs of many, they also contribute to feelings of an organizational saturation. Moreover the attempts to create TCS working groups within IFIP came at the point when the field has been, for itself, already quite established outside of IFIP and therefore, quite naturally, also, various feelings have arisen of a undesirable or questionable competition or even of undesirable attempts from IFIP SGFCS and their groups to dominate or to interfere.

Another important obstacle for creating more working groups within IFIP is that for many it is not clear, and even many seem not to be much satisfied with available answers, what a particular area of TCS can gain by being organized (also) as an IFIP working group. Moreover, there are various misunderstandings concerning impacts that could this have on already existing informal "working groups" would they decide to use IFIP umbrella.

There is, for example, a widespread belief that a specific subarea of TCS, that is already somehow organized, for example around a regular meeting, could lose something by being organized (also) as an IFIP working group. That it could, for example, lose independence and it would need to follow IFIP rules or orders set up by who knows whom. This is certainly a completely wrong feeling. There is nothing to lose. IFIP

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is practically fully respecting the fact that in different fields there are different views how to proceed in order to develop the area. Moreover, not only IFIP has no intention to gain a control over some areas or to make a presure on it, it has also no means of implementing such a potentially worth-case tendency. Various suggestions of IFIP GA, Council or Executive board serve practically as recommendations. Moreover, IFIP is concerning working groups very nonbureaucratical. Organizational overhead coming from IFIP is negligible.

It is much harder to give a convincing answer to another basic question: What an area of TCS can gain by being organized as working group of IFIP or at least as having also an IFIP working group closely cooperating with the existing informal working group. Since IFIP budget is very modest the gain is little directly on the financial side. However, also here there is something to get and gain. Some operating money, loans or support for some special events and financial backing for events. In several technical committees they found attractive the possibility, through IFIP, to make use of money earned on an event in one country to support another event in another country. For those areas of CS that are able to organize broadly attended meetings this may be a significant source of money to support less profitable events. A liaison of IFIP with UNESCO has also been beneficial in some cases for getting financial support. IFIP can provide a significant publishing and propagation space. For some people, especially outside of North America and Europe, it may also be more easy to get support from various sources for a participation on an IFIP event than on an event organized by a not formally established group. The main advantage of being an IFIP working group seems to be, however, elsewhere: increased visibility of the subarea within the whole CS-community and also outside of it, higher organizational level and better backing than that of an informal and unofficial group established around a conference or journal and, finally, a more natural framework to make use of world wide resources and to achieve a world-wide impact.

Currently it seems to me that the most perspective way how to solve problems of the involvement within IFIP of the those informal groups that exist outside of IFIP, is through some kind of "federative" approach that could also preserve the existing informal structures and their activities and positions.

8. In spite of the fact that working groups are currently an important and hard problem for SGFCS initiative, they are far from being the only way SGFCS can and does influence TCS developments and can contribute to visibility of TCS. Also within IFIP environment the overall activity and production of SGFCS and its working group in terms of meetings, publications and so on are also important criteria the field is seen outside. (In some technical committees they are very active in both directions and that certainly contributes to recognition and visibility of the field.) The fact that overall scientific, conferencing and publishing activity of TCS community is in no way behind other areas of computer science does not help much once this is not clearly seen.)

IFIP Congresses are certainly another space where TCS can and should, in competition with other areas of CS, show its strength and importance and gain respect and visibility. From this point of view TCS has been doing relatively fine during the last two IFIP

Congresses. It has provided a significant part of the program and had strong program of invited speakers. At the same time, however, the overall quality and the number of submissions and lecture attendance, especially at the last Congress, have been far from what would be desirable.

Support of TCS outside of North America, Europe and Japan is certainly another possibility and one of those goals of SGFCS that everybody seems to agree with. It is, however, also less clear how to do that. A help to initiate a series of TCS conferences LATIN in South America has been one step that seems to be successful (a very successful LATIN'92 was held in Sao Paulo (organized by I. Simon and his group) and the next one is planned to be in 1995 in Chile.

Other not too much controversial but also not easy to implement idea for SGFCS activities seems to be a support of interdisciplinary developments between theoretical computer science and other sciences. This is actually a special subproblem of a more general one - to support broadening of the scope of TCS.

The main tools IFIP bodies have been using so far to support the developments of particular areas of CS are meetings, especially working conferences, and publications, They also seem to be the main ones SGFCS can use unless some nonstandard ones are developed. (Design of ALGOL languages and some work on standardization are among other IFIP's successful projects.)

There are of course other possibilities SGFCS can influence development of TCS. IFIP environment is a natural one for a TCS to make for both sides useful contacts with member CS-societies. (For example by "providing" speakers for their main meetings as it has been in a recent case.) Quite important seems to me also the fact that, because of its IFIP affiliation, SGFCS is a natural partner for other international science organizations in dealing with problems of common interest and in providing a mutually useful cooperation. Presence of TCS at the International Congresses of Mathematicians is for example one of such issues worth to deal with.

9. To conclude I would like to emphasize once more that the aim of the paper has been to inform TCS-community about IFIP SGFCS initiative. In order to clear up breadth and depth of some problems and also of various misunderstandings and often raised question discussion and analysis went often quite a bit into details. The aim has been both to increase awareness of TCS community of these problems and to stimulate TCS community to help to solve these problems - to express positions and to suggest potential ways of solving them. All comments and suggestions are much welcomed.

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Survey of Recent Doctorates in Theoretical Computer Science

The ACM SIGACT Long Range Planning Committee is studying employment opportunities and funding sources for members of the theoretical computer science community. The Committee consists of Amihood Amir, Manuel Blum, Michael Loui, John Savage, and Carl Smith (Chair).

The committee seeks information about people who completed dissertations in theoretical computer science during the calendar years 1989 to 1993. If you did so, then kindly complete the questionnaire below. If you supervised a dissertation, then please pass the questionnaire to your former doctoral student.

Thank you for participating in this survey. Your responses will be used to benefit the community.

QUESTIONNAIRE

To be completed by people who completed the PhD with a dissertation in theoretical computer science, 1989-1993, in the United States and Canada.

Name:

Citizenship at time of PhD:

Date of PhD defense (month, year):

University granting PhD:

PhD department/program (CS, EE, Math, etc.):

PhD advisor's name:

Title of dissertation:

Employment and unemployment since PhD defense (positions, departments, institutions, beginning and ending dates):

Current email address (if any):

How would you characterize your current position? (Choose one)
    Research department with PhD program   Industrial research laboratory
    Research department with MS only   Industrial development
    Teaching department with MS program   Government
    Teaching department with BS only   Self-employed
    Other (explain)

What is your primary activity? (Choose one)
    Research and Teaching   Research only   Teaching only
    Software/hardware development   Management   Consulting
    Other (explain)

Did you prolong your graduate study to find a suitable position? If so, for how long?

What difficulties did you encounter in finding suitable employment? How many interview trips did you have? How many job offers did you receive?

What advice about seeking employment would you like to share with doctoral students who are writing their dissertations in theoretical computer science?

Please return promptly (via email if possible) to
Jalisa Norton, College of Computing, 801 Atlantic Drive, Georgia Institute of Technology, Atlanta, GA 30332-0280, Phone (404) 894-9760, Email `jalisa@cc.gatech.edu`

Submission Guidelines

SIGACT News is the quarterly newsletter of the ACM Special Interest Group on Algorithms and Computation Theory. *SIGACT News* welcomes contributions of interest to the international theoretical computer science community. The type of submissions solicited include:

Letters to the Editor: Open letters that constructively contribute to the interchange of opinions on issues of importance to the theoretical computer science community.

Transitions: Permanent and temporary changes of professional address. These should include the duration, and may include electronic mail address, telephone number, and fax number.

Regular Features: Suggestions (and volunteers) for new columns and other regular features are welcome. Suggestions for current columns should be directed to the appropriate columnist.

Reports and Pictures: Reports and pictures from recent professional meetings.

Education Forum: Textbook information and other items of interest to the computer science educator. These should be submitted to the organizer of the Education Forum.

Book Reviews: Authors and publishers may submit books for review directly to the Book Review Columnist. Volunteers are welcome to review books in their area of expertise.

Articles: Short technical articles (up to eight pages in length) will, if appropriate, be printed in *SIGACT News* as unrefereed working papers. Humorous and satirical articles are especially welcome.

Conference Programs: Programs of forthcoming or recent conferences.

Calls for Papers: Calls for papers for conferences and special issues of journals.

Calls for Participation: Announcements of upcoming conferences, with registration details if appropriate.

Theory Calendar: Notice of upcoming events must be submitted to the organizer of the theory calendar.

Announcements: Miscellaneous announcements of interest to the theoretical computer science community.

Deadlines

Deadlines for submissions are

| *March issue:* | February 1 | *June issue:* | May 1 |
| *September issue:* | August 1 | *December issue:* | November 1 |

Since many submissions to *SIGACT News* are time-sensitive, these will be *hard* deadlines. Submissions received after these deadlines run the risk of being held over until the next issue.

To allow time for *SIGACT News* to be printed and mailed to its subscribers, submissions that publicize deadlines (such as "Calls for Papers" and "Calls for Participation") should have that deadline fall no earlier than two months following the submission deadline for *SIGACT News*.

Submission Procedure

Electronic submissions are encouraged. Except as described above, manuscripts are to be sent to the Editor at `ian@ponder.csci.unt.edu`. The word processor of choice is LaTeX, but TeX and `troff` are also acceptable. Electronic submissions must be in their final form. If electronic submission is not possible, or the word processors listed above are not available to the author, then camera-ready submissions are required. Submissions will be acknowledged by electronic mail.

Format

The preferred format for manuscripts is single spaced, 11 or 12 point type, with a text width of 6.5 inches (16.5cm), and a text height of 9 inches (23cm). Use of the LaTeX `11pt` or `12pt`, and `fullpage` styles are recommended. Single-page "Calls for Papers" may deviate from this format. Camera-ready copy should be high contrast, on white paper, unfolded and unstapled. All submissions (whether electronic or hard-copy) should be without page numbers. If desired, hard-copy pages may be numbered lightly on the reverse side with a blue pencil.

Photographs for the "Reports and Pictures" section must be laid out by the submitter. The photographs must be pasted to thin, white cardboard, and mailed in a rigid protective cover to prevent damage in transit. Legible captions must be provided. Photographs may be either color or black-and-white. A suitable border must be left on all sides; in particular, there must be room for page numbers to be added at the bottom of the page.

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