

## Report on Fulbright Project 1653

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Upon arrival in Paris on the morning of June 1, 2005 I was met by Dr. Dominique Archambault, of the University of Paris VI. Together we traveled to the Cite Universitaire in the south of the city. The Cite Universitaire is a very large complex of residential and administrative buildings set around a lovely park with all sorts of athletic facilities all accessed through a beautiful administration building. The park contains 37 buildings representing different countries that have sent students and faculty to the university over the years. My room was in the Pavillion Cambodge, or the Cambodia



Pavilion. The room included a small kitchenette, bathroom, work area and bedroom. Internet access was also available from the room. Across the street from the Cite Universitaire is an RER station that connects into the Paris Metro system and afforded very convenient access to the university. Transport around Paris is really excellent.



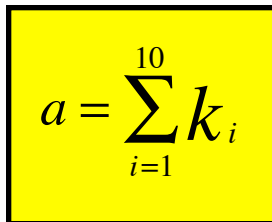
After a quick run around the park and a shower, I proceeded to Dr. Archambault's office to finalize plans for the visit. a general outline of our proposed works includes:

1. Create a general timeline and milestones for discussions with Dr. Archambault and his staff.
2. Create a general timeline and milestones for the development tasks to be completed during my visit
3. Plan meetings with local faculty and professionals from the University of Paris VI and the University of Paris St. Denis.
4. Plan dates for presenting talks to local and international groups.
5. Make plans for discussions with other university staff interested in assistive technologies.

The entire visit centered around the design, development and deployment of assistive technology tools to assist blind students in the learning of math. Dr. Archambault's group is developing tools to translate French Braille Mathematics codes to present to students. My work is to

make these codes understood by students via verbal methods. As a result our work and our talks were concerned with the following issues:

1. In the translation of mathematics to some sort of Braille based notation, we must determine which is the best canonical representation for the equation itself. This is a critical issue as the wrong choice at this point would preclude further translations. As a result we selected MathML, a context free markup language as our canonical representation. MathML is accepted around the world and is a standard.
2. There is a basic pedagogical issue associated with our work. Should we present the blind math student with more semantic information about equations than we present to sighted students. For example given the following equation


$$a = \sum_{i=1}^{10} k_i$$

should we read this as

- a. "a equals the summation from i equal to 1 to 10 of k sub i"
  - b. "a equals sigma subscript i equal 1, superscript 10 baseline k subscript i"
3. Rendering of equations is a difficult task with little good software available. Our efforts to build quality and standardized tools depend on such tools. We have now agreed on a product from Australia and now have to agree on the use of this tool in our projects.
  4. As much of our software is designed to be international in nature, one interest of our efforts was to try to make our software multi-lingual. To that end, French language capabilities were developed for the math reading tool.
  5. We had planned originally to have informational meetings with other institutions and and groups within the university. The definition and content specification of this aspect of our work was developed during the early phase of our work.

Most of the time spent with my colleagues dealt with the resolution of these issues. On a daily basis meetings (mainly informal) were held between myself and appropriate staff at the university. Much of this time was spent with the students working for Dr. Archambault. These students are bright, interesting in decision making as well as were very anxious to cooperate the span of my visit became work with and in many ways warding. Actually, everyone at coming and extremely supportive relationships made during my visit scope over the next few years. during my visit will also become more permanent in the near future.



and interested in participating implementation. The students with me as a visitor and over quite close. They were a joy to helped make my visit so re- the university was warm, wel- tive. I am certain that the rela- will continue and expand in Indeed, other connections made

During the period of the visit, other colleagues from Ireland and Austria came to Paris to meet with me and my Parisian colleagues. During their stay, discussions were held concerning our joint efforts in the past and discussion was the organization on Computers Help-held in the summer of 2006. I position of Program Chair for ing with these colleagues over tional effort. Also coming three blind scientists who giving us input on our ongo-



into the future. One issue of tion of the International Con- ing People (ICCHP) to be have been appointed to the this meeting and will be work- the next year in this organiza- from these countries were worked with the Paris group ing efforts.

The penultimate activity that was the capstone of our efforts, was a small conference we held at the University of Paris St. Denis. The meeting at St. Denis was presented to the assistive technologies master's pro- tion. Attending this meeting from both the University of Paris St. Denis. Five presenta- two hour sessions with a great the presenters and the audi- were made. The picture here chambault during my presen- are as informal as I.



program housed at that institu- were faculty and students Paris VI and the University of tions were made during the deal of interaction between ence. Again, new connections is of me taken by Dr. Ar- tation. Thankfully, Parisians

In summary, I found the Fulbright Senior Specialist visit this past summer to be highly satisfying and productive. I think (and hope) that my hosts were as satisfied as I. As hosts, my colleagues should receive a grade of A+. Not simply for the intellectual resources but also for their level of cooperation and congeniality.

Finally, I want to recount an experience I had at the University of Paris. I call the experience "The Unlikely Frenchman, or Star Trek Meets Reality."

Shortly after my arrival in Paris, my host Dominique Archambault introduced me to a very interesting colleague named Jacques Albis. Jaques is a staff member at the University of Paris who is in charge of all Braille translations needed by student on the VI campus. So, i was quite eager to meet him and learn something about the real issues associated with blind students.

We met Jacques for coffee and upon introduction, Jaques said "howdy pardner, how y'all doing?" Jacques speaks perfect English, but with a very heavy Blue Grass, country singer accent. I naturally assumed that he had grown up somewhere in the souther US and had then moved to France.

Well, was I ever wrong. Jacques, a man in his 40s had not paid his first visit to the US until two years ago. So, how did he learn English and Especially English with such an accent. Jacques explained that since childhood he had been a fan of Blue Grass and country music and in fact was currently playing in a Blue Grass band in Paris. His knowledge of English came from records he heard and TV shows he had seen. Needless to say, I was impressed.

The next day, while thinking more about Jacques, I remembered a couple of old episodes from the original Star Trek series. Both of them dealt with Kirk and the Enterprise finding societies on far away planets that mimicked an older period of Earth history. One of the Star Trek episodes depicted a culture on a planet in another galaxy that was reliving Chicago gang wars of the 1930s. The second episode mimicked a far away planet and their reliving life in Nazi Germany in the 1930s and 1940s.

In both cases, Kirk, Spock and company discovered that both of these worlds had learned their culture from old TV programs that had been broadcast on Earth and reached them some time later. They were so intrigued by what they saw that they decided to adopt the cultures shown in the broadcasts.

Is this an instance fiction reflecting reality, or the other way around? Hmmm, I'll let you decide.