

Acknowledgments

I am truly and deeply indebted to so many people that there is no way to acknowledge them all, or even any of them properly. I sincerely hope that everyone who knows that they have influenced me feels satisfaction that they have helped such a poor soul along and does not feel remorse that either I did not get it right or then ungratefully omitted them from explicit mention. I offer my sincerest apologies to anyone in the latter category. The nature of this work is firmly in the Blanche DuBois "relying on the kindness of strangers" camp, and without the efforts and kindness of all the people involved in this project, the previous projects, as well as those who have profoundly influenced me and helped me get to this point, this work would not and could not have been done and I certainly would not have been in the position to do it. I extend my deepest gratitude to all.

The first person I have to thank is my advisor, Seymour Papert. Properly describing Seymour's influence is like trying to define intelligence -- no matter what you come up with it only seems to capture half the story. Seymour has had the most formative influence on my adult life. I truly think, look at, and act in the world differently due to Seymour's influence. Among other things, Seymour is famous for saying "You can't think about thinking without thinking about thinking about something." I cannot think about thinking or learning without Seymour's influence. When I think about it well it is when I try to think about how Seymour would think about that something. Although we often shy away from the word, Seymour is the ultimate educator. He can find the goodness and intelligence in anyone and then help build upon that always in such a way that the growth

always belongs to that person. Our popular conception of a good teacher may evoke images of someone who is a good talker. Seymour may be one of the most scintillating speakers I have ever heard, but even more impressive is that he is perhaps the best listener I have ever met. By listening, and concentrating, on what someone is saying, and then engaging them through that person's viewpoint, one learns in ways that one cannot quite imagine.

While researching this thesis, I reviewed some old writings of Seymour's. I was amazed at the currency and relevance of so many of those ideas. Seymour created a new field and laid groundwork that not only still is valid but also still is misunderstood or poorly understood by so many. However, Seymour's contribution did not end there. He continues to work and to add to the theory and practice in the field.

How Seymour does this is most impressive. He does not sit back and pontificate. Rather, he is there creating new projects and working with all the children, whether it is kids in the juvenile jail, kids in poor rural areas, kids in his neighborhood, or kids anywhere. He not only is a proponent of "kid power," he also is an enabler and admirer of that power. I have been fortunate enough to be with Seymour with kids as well as with presidents, ministers, governors, corporate executives. He treats all of them with the utmost respect and it is to this that people respond.

Seymour has been so much more than just the best advisor that he is beyond categorization. He has been the best friend, mentor, teacher, companion, and confidant. I

am truly fortunate to have been able to enjoy and benefit from such a relationship with him and the best way to show this is for me to extend these qualities to others. I can only try. Thanks, Seymour!

Perhaps the best work I did in the course of this thesis was to choose an incredible committee. To Henry Jenkins, Edith Ackermann, and Brian Smith I also extend my deepest gratitude. Henry is an MIT treasure, opening new areas, new ideas, and new ways of looking at things. Henry opened the world of critical theory not only to traditional areas but also to new computational media, while bringing a strong sense of justice and values. His classes are scintillating and conversations with him are always a learning experience.

Through Edith I have come to know not just Piaget, although that would have been enough, but also many other areas. Her breadth and depth are amazing. Only her modesty and the blindness of others prevents her from being recognized for the genius she is. I look forward to years of collaborating with her.

Brian's wit makes him a fantastic companion, but his intelligence and deeply critical and analytical way of looking at ideas make him a fantastic colleague. He sees the value in and enjoys working with real kids in real settings. Again, I look forward to years of collaboration.

I also benefited from the work of my unofficial committee. Shep White, Walter Bender, Gloriana Davenport, Andre Boder, Ron MacNeil, John Maeda and Jack Driscoll all helped me work through ideas. I benefited tremendously from Shep White's classes, and also enjoyed many lunches and conversations. I benefited from Gloriana's talks about her work within Project Lighthouse, and she also gave excellent comments on earlier drafts. Walter not only discussed ideas, he also read and helped edit the entire document. Where I still manage to fracture the language and create a document difficult to traverse is due to my stubbornness and not his qualities as an editor. Andre not only helped me learn so much about learning and development, but has become one of my best friends.

Howard Austin has been and continues to be an inspiration, source of ideas, and excellent discussant. More than anything, he is a fantastic friend. His generosity is boundless. As his friend Noubar says, Howard is the pre-eminent "knowledge-seeking missile." His intelligence is overwhelming and I am honored and deeply indebted to be his friend.

Without Jacqueline Karaaslanian I never would have met Seymour and certainly would not have finished anything. I tease Seymour that Jacqueline understands the ideas as well as or better than any student and perhaps he should just hire people rather than take students. That she can manage the group's, Seymour's, and even my affairs is testimony to her capabilities as an administrator.

I have to thank Nicholas Negroponte and the other founders for creating such a place as the Media Lab that empowers graduate students to take on large projects no matter how

weird or far out. The creative environment, people associated, and resources available combine to make the place stimulating, exciting, convivial, and productive. The lab could not function without many people creating this environment and I am indebted to them. The people behind the scenes do a tremendous and often thankless job to make the place run and we all benefit from their hard work. In particular, among them I would like to thank Dennis Irving, Greg Tucker, the Necsys group, and especially Linda Peterson. Linda has an impossible job and manages to carry it off gracefully, kindly, and fairly. Without Linda I probably would not have graduated.

I have benefited from the work of the groups around Seymour over the years. The Epistemology and Learning Group at MIT has produced tremendous work and a wealth of ideas from which I have gained considerably. I have been fortunate enough to have had contact since 1984 and have enjoyed the friendship and collegiality of the students, staff, and others who collaborated in the group's projects during this time. In particular, Seymour's students in the years since I have been at MIT (Paula Hooper, Alan Shaw, Aaron Brandes, Michelle Evard, and David Williamson Schaffer) were an interesting and fun group. I learned very much from many discussion with Paula in particular and wish to thank her for her generosity and kindness. Alan's influence on this work is obvious. I benefitted greatly from discussions with Aaron, Michelle, and David. Seymour's current group of students, Marina Umaschi Bers, Savalai Vaikakul, and Claudia Urrea, are a wonderful and exciting group. They all contributed greatly to this work as well as to setting an invigorating intellectual climate at the lab. Mitchel Resnick and his students continue the tradition of the E&L group and provide a basis for the continuing

development of the ideas. Although it is unfair, I particularly want to thank Bakhtiar Mikhak (and his family) and Rick Borovoy for their kindness, conversation, and support. I have been extremely fortunate to share offices with some of the best people at the lab. I have to thank my officemates Amy Bruckman and Marina Bers not only for benefiting from their intelligence, wit, humanity, and companionship, but also for all the patience and generosity to put up with my messiness, tardiness, and disorganization, as well as with the rudeness or lack of tact shown by the many people calling to look for me when I was often elsewhere. Prior E&L students from whom I have learned a lot and who have assisted me greatly include Carol Strohecker, Aaron Falbel, Kevin McGee. Carol's work and character are outstanding and I always enjoy our too infrequent talks over coffee. Aaron is a moral compass. Kevin is a joy. Although they were not in E&L per se contributed much to the ideas, Mike Travers and Marc Davis.

I also want to thank the many people who undertook the difficult, often thankless, and certainly poorly paying tasks of putting the ideas about learning environments into practice in very difficult places. Without their work and sacrifice the work at MIT could not exist. I especially want to thank Carol Sperry and Michael Tempel for their friendship and thank them for how much I have learned and gained from them. Carol and Michael are both excellent teachers, primarily because of their ability to develop strong relationships with us all. Cynthia Solomon not only contributed to Project Lighthouse and our work on vocational education, her depth of understanding of the basis for Logo makes her the best discussant. Her insights are always deep and invaluable.

Jose and Ann Valente have also been not just wonderful friends but also wonderful teachers. Their development of the NIED group at Unicamp in Campinas, Brasil, provided another wonderful group of researchers from whom I have learned much. They, more than anyone, understand how one can do excellent work and still provide a warm, friendly, and convivial atmosphere. I thank all of them for hosting me on several trips there. I also want to thank Rodolfo Baccarelli and Tadao Takahashi for their support and friendship.

It is obvious how much I learned, gained, and enjoyed from the work in Thailand. Without all the people there, it would not have been possible. There are so many people involved that I cannot thank all of them. But I am tremendously indebted to all of the participants and I wish they could have gained even a small percentage of what I have gained from the experience. I hope no one will be disappointed that I could not mention everyone by name. All the people at all of the sites mentioned in the dissertation have been wonderful. The legendary friendliness of the Thai people is not mere tourist propaganda. It has been a wonderful place to work not merely because of its beauty, but overwhelmingly because of the people. However, I would be remiss if I did not mention at least some by name.

Without the passion, compassion, diligence, and energy of Anita Horton we at MIT would never have been contacted to help in this effort. Without the intelligence and support of Dr. Dumrong, this project could not have begun. Khun Paron worked incredibly hard over incredibly long hours even at tremendous personal sacrifice to help

make the project successful. His intelligence, ethics, and diligence are inspiring to us all. He opened so many doors, convinced so many people, organized and administered so much work, and did more than anyone could imagine that any success in this project is directly attributable to him. We have all gained from knowing him. Khun Bangkok likewise has put in so many hours that it is mind-boggling. He has worked so hard, again at personal sacrifice, to help make the project successful that we are all indebted to him. His friendship and good cheer, plus his knowledge of restaurants and food, enriched my life. I enjoyed our many conversations both in Thailand as well as on the phone. I miss them now that they are less frequent.

The original group of supporters and advisors provided a strong basis upon which to begin work. Their friendliness made the project enticing. Among them in particular are Dr. Sippanonda, Dr. Krissanapong, Dr. Harit, Khun Adul, Dr. Chaianan, and Ajarn Bupphachart.

I have particular fondness for the original participants. Dr. Suchin, Paw Ackachai, and Ajarn Jirachai created a wonderful environment in which to work. I learned so much from them. Their hospitality was stupendous. Their staffs exceptional in their work and wonderful in their kindness. The NFE teachers at Chiang Rai, Lampang, and Mae Fah Luang did wonderful work under difficult circumstances. Again, although it is unfair, I want to thank Nong, Nine, Toi, Tik, Neung, Bom, June, Narawan, Fam, Nok, Tookta, Pramote, Pom, Jo, Nan, and La (and apologize for using nicknames as well as missing a few whose names I did not have). I would be remiss if I did not give special mention to

Ae and Denchai who inspired us all. Pom, formerly of the Suksapattana Foundation, did so much for us even though we made things difficult by constantly changing plans at the last minute. All of the people from PDA made it easy for us to begin work in Nang Rong. Khun Meechai is an inspiration to millions of people. His top staff at PDA are deep and tremendously committed people. Khun Booncherd's dedication and hard work made the Cbird center successful in the eyes of the villagers which gave us immediate legitimacy that otherwise we may never have earned, or at least would have taken many years. Khun Gaensri and her family were a tremendous help. Of course all the Thai MIT students who participated in the project contributed so much to its success. Helping to localize Logo for Thai language was difficult but extremely important. Translating is always a difficult job, but it is even more difficult when having to translate unfamiliar concepts in real time. Atchicha, Peng, and Piyada did fantastic work and it is an honor to know them. Roger (Arnan) also provided so much to the project and it is wonderful to have him at MIT as a student now, even though the project suffers from his absence. Thanks also to Roger for taking the photos I used in this thesis. I am indebted to the other MIT participants, Deb Roy, Michael Best, Arjan Schutte, Philip Tiongson, Janet Cahn, and Vanessa Collela, not only for their work but also for their friendship.

I want to thank all the people at Harvard University Health Services. It was a wonderful place to work and they are very dedicated people. I gained so much from it. In particular I want to thank Marc Pollack who had the impossible task of being my boss. He was the best. I also want to thank Noly Williams, Marge Fisher, and Audrey Salles of the IS and medical records staff for their collaboration and friendship. Howard Austin, David Tan,

Dean Scharnhorst, Richard Wells, and Charlie Munitz were great to work with and contributed immensely to the ideas and did all of the development work on the system development.

I spent many formative years in Cleveland and gained so much from so many. I want to thank Allen Siegal, Mike Franyin, Ted Dostal, Eric Mumford, Abdul Shakur, and Idris Abdul Latif in particular. All of my extended family, Howard, Gertrude, Sandra, and Damon Bagley and the whole McCulley clan, have provided warmth and love for many years.

Family is extremely important to me in all likelihood because I am blessed to have such a wonderful one. It is a pity my Mom passed away in 1998 and did not see this day. At least she lived long enough to know I would get here. Her intelligence, compassion and love of books are deep within me and provide a lifelong inspiration. I miss her.

My brother Michael helped raise me. He is the best strategic thinker I have ever met. His family, wife Leah, and children Jacob, Bren, and Gideon, are all wonderful to be with. He has helped me in so many ways that there is no way I can repay him.

Without my Aunt Susan I would not have gone to, or been able to survive, Rutgers. Susan is an inspiration and my role model for how to be an academic. I cannot say how many of her students and colleagues have gushed to me about how influential she has been in their lives. My cousins Eric and Paul are also wonderful companions and friends.

I have learned and gained more from my children, Uthman, Malik, Kareema, and Aiury, than I could ever hope they could get from me. I am so proud of them it is ridiculous. So many people tell me how wonderful they are that it must be true and not just my subjective opinion. When people compliment them and ask how I managed it, I like to joke that if you set a bad enough example, then your kids act right saying "you don't want to grow up like Dad." I am afraid it might be more a truth than a joke. It is strange to say that one's children are an inspiration, but in my case it is true. I love them more than anything. Now that they (excepting Aiury for a while and Malik at least for now) have begun their own families I am learning from how well they are raising their children. Susan Hart Cavallo is a joy and just a spectacular person. Her family is warm and wonderful. My grandchildren, Amina, Justin, Rameses, David, and Julian, are brilliant. I look forward to learning more from them than from my kids.

Without the love and support of my wife Alice I would be nowhere. It was her suggestion to go to MIT. It was her support that enabled me to go. It was her sacrifice to enable me to succeed. It is her love of life, joy, and kind-heartedness that is a daily reminder of why anyone does anything. I am so indebted to her there is no way to repay it. Thank you, Alice, for everything.

I also want to thank the whole Fonseca family of Brasil for their warmth and kindness. I would be remiss if I did not single out my mother-in-law, Dona Alice Mello da Fonseca.

Muito obrigado, Dona Alice, pelo seu carinho, atencao, e denego. A senhora e a pessoa mais doce que eu ja conheci. Sem a sua ajuda (e cafezinho) eu nao poderia ter terminado.

Last, but certainly not least, I want to thank my dear friend Greg Gargarian. At his funeral the priest said that everyone felt Greg was his or her best friend. It was the most apt description. Greg was so unassuming and humble that people underestimated him. His insight, thoughtfulness, and generosity helped so many people. I am fortunate enough to be one of the ones Greg helped. If it were not for Greg, I would not have kept in such close contact with the ideas and work of the E&L group and the Media Lab. I would not much without ever thinking of what he might get in return. Thank you , Greg, for everything. The world is much richer for your having been here, and much poorer for your leaving it so soon.