

Preface

In the summer of 1971, when I was traveling with Bryce DeWitt and his other new graduate students in Europe, I remember seeing him sitting at a desk for days on end writing lecture notes. Since we had met just a few weeks before, I was astonished at how focused and dedicated to this endeavor he was. We were staying at the International Centre for Theoretical Physics outside Trieste, Italy and we students had been given the task of reading a prerelease copy of Misner, Thorne, and Wheeler's new book *Gravitation* while Bryce wrote his notes. Bryce's lectures were to be given in the Fall of that year at Stanford where he would be visiting after leaving The University of North Carolina at Chapel Hill to take a new position at the Center for Relativity at The University of Texas at Austin.

We eventually all arrived in Austin in January of 1972. Later, when we got offices in the new physics, math, and astronomy building, I was situated in the little office outside his and was given the task of organizing his preprints, reprints, and other papers. This sounds like a menial job, appropriate perhaps for a new student, but it was one of the most memorable times of my life. Within these papers were his lecture notes, favorite papers written by others, and many unpublished calculations and manuscripts. Amongst these were more than three hundred pages of the Stanford course he had given and I had not seen. The fact that he had put them together in so short a time made me feel even more in awe of his abilities and anxious to take any class he might teach. In fact, some of what was in the Stanford notes eventually could be heard in his Theory of Everything course (long before this term became popular for other reasons).

Bryce was one of the most respected researchers in Quantum Gravity and related subjects of the last half of the twentieth century and into the twenty first and, as with many such people, his teaching was perhaps not well known. But like taking a class from Wheeler or Feynman, being a student of his was frankly historic in my mind. Each day after one of his lectures, I would go back to my tiny apartment and rewrite my notes line by line to try to absorb what he was saying in a much deeper way than in the classroom. I had the honor of having many wonderful teachers in my academic career, but few were as exciting to listen to as

Bryce. Somehow, I got more from his words and equations on the blackboard than ever before.

Bryce was not the kind of teacher who just taught in the classroom. He went to lunch with his students very often and challenged us all to think more deeply into any subject we were studying. I wish there had been recording technology like my iPhone at the time. Some of those lunches were fascinating in the extreme.

Bryce not only taught advanced graduate courses, but also basic physics to those large undergraduate classes so many universities have now. A few times, as his teaching assistant, I would take over a class when he was out of town. Once, one of the students came up to me after class to say something like, “We all love Professor DeWitt, but it is nice to sometimes have someone like you give the lecture. He is such a good lecturer and so awesome, we sometimes get caught up in that and not what we are trying to understand. Having someone at our level give the lecture makes us feel like if you can learn it to teach us, we have hope of getting it too.” I smiled at her somewhat demeaning comment, but I did understand what she was getting at.

When Bryce’s amazing and loving wife, Cecile, called me to see if I might edit his notes and put them into book form, I was both honored and flabbergasted. It took far too long to accomplish the task, I think mostly because I wanted perfection. Because Bryce was no longer around to make sure I did it right, there were months when I could not deal with the work. But, here are the results.

This book is not a textbook, though it contains lectures and problems. Like Bryce’s other books and papers (all of which should be studied thoroughly by any serious person interested in quantum theory, relativity, and gravitation), these chapters and the calculations in the appendices will give you some insight into his thought processes and extraordinary talents as an equation manipulator.

Some of the chapters here are very complex. These are lecture notes after all and you will find extensive detail, including appendices containing various side calculations. It is certain that many of these lengthy derivations cannot be found in any other book or paper.

I found the chapters related to Special Relativity to be nostalgic in particular. The science fiction novel *Tau Zero* by Poul Anderson http://en.wikipedia.org/wiki/Tau_Zero was one that Bryce had read and used the ideas in the book to illustrate his lectures. He gave me his paperback copy of *Tau Zero*, which I still treasure.

These notes were written nearly forty years ago. Clearly much has happened since then and any subject that catches your interest should be followed up with reading the latest work. Cecile and I choose to keep the book in the form that Bryce wrote the notes and made as few changes or additions as possible. This is an historical document designed to preserve his thoughts.

The process of converting hundreds of pages of handwritten notes and equations into the manuscript was tedious in the extreme. My deepest appreciation goes to Steven Lyle and Christian Caron at Springer for their patience and major support with the TeX and publishing issues, to Stephen Fulling for TeX guidance, and to Jacob Bekenstein and Chris Eling for many comments on [Chaps. 10–12](#).

Very special thanks go to Brandon DiNunno in Austin who spent a great many hours comparing the handwritten notes against the typeset text looking for issues and typos that I did not find. Any problems of any kind with the book are entirely mine. Errors and other comments can be sent to me at steve@smc.vnet.net. I will collect any and put them up on the web.

The manuscript was processed using the TeXShop software on a Macbook Pro computer. I drew illustrations using Adobe Illustrator.

My heartfelt affection and thanks to Cecile for her guidance and encouragement.

Several times I offered to give the work over to someone else and she would have none of it. I urge everyone to read the book, [“The pursuit of Quantum Gravity–Memoirs of Bryce DeWitt from 1946 to 2004.”](#)

Finally, my gratitude and love to my wife, Sunny, for her constant support and encouragement in this and all my efforts.

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