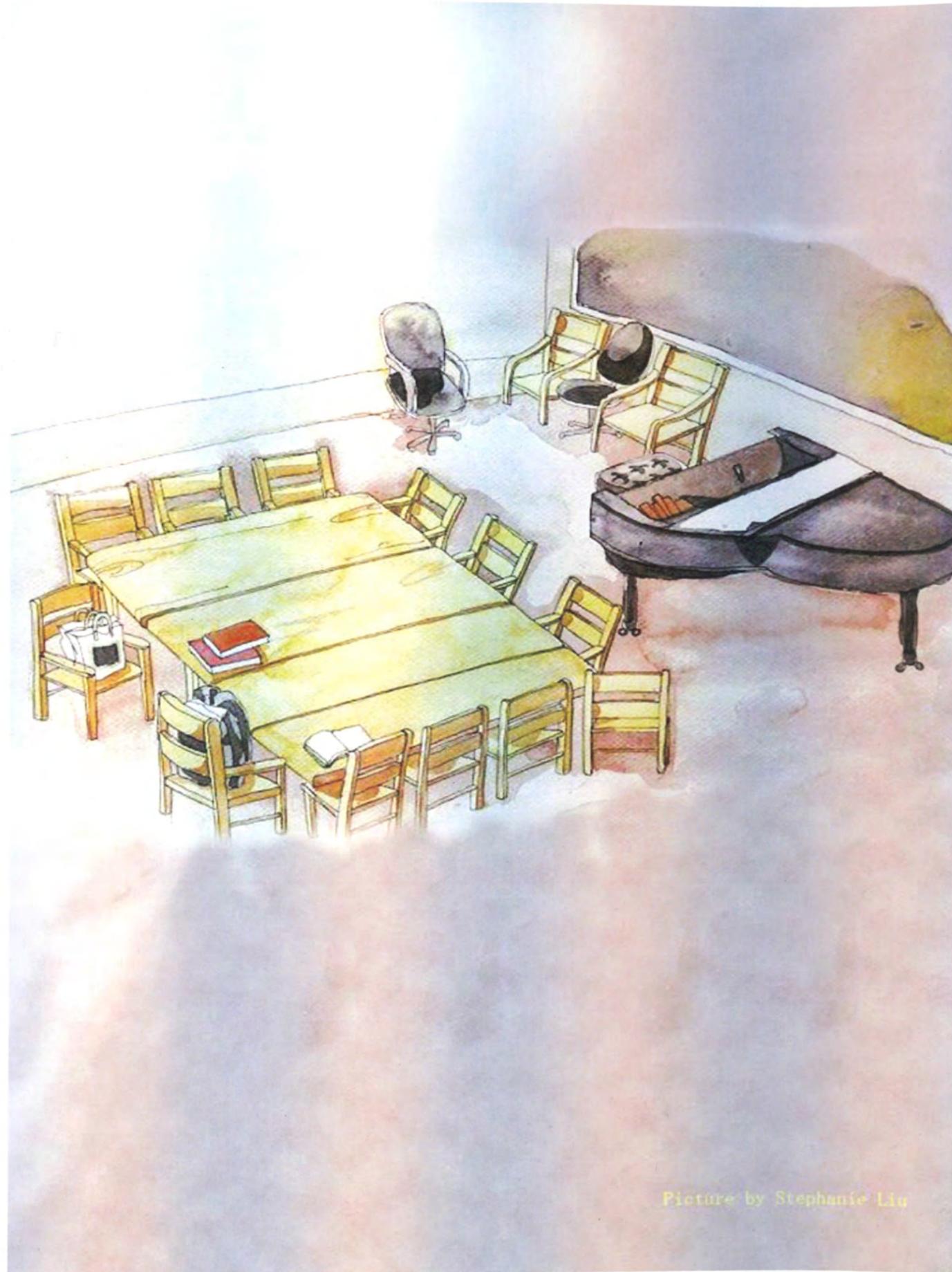


A STUDENT-RUN MAGAZINE OF ACADEMIC WRITINGS AND DIALOGUES



Picture by Stephanie Liu

ιστορία*

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*A Learning by Inquiry

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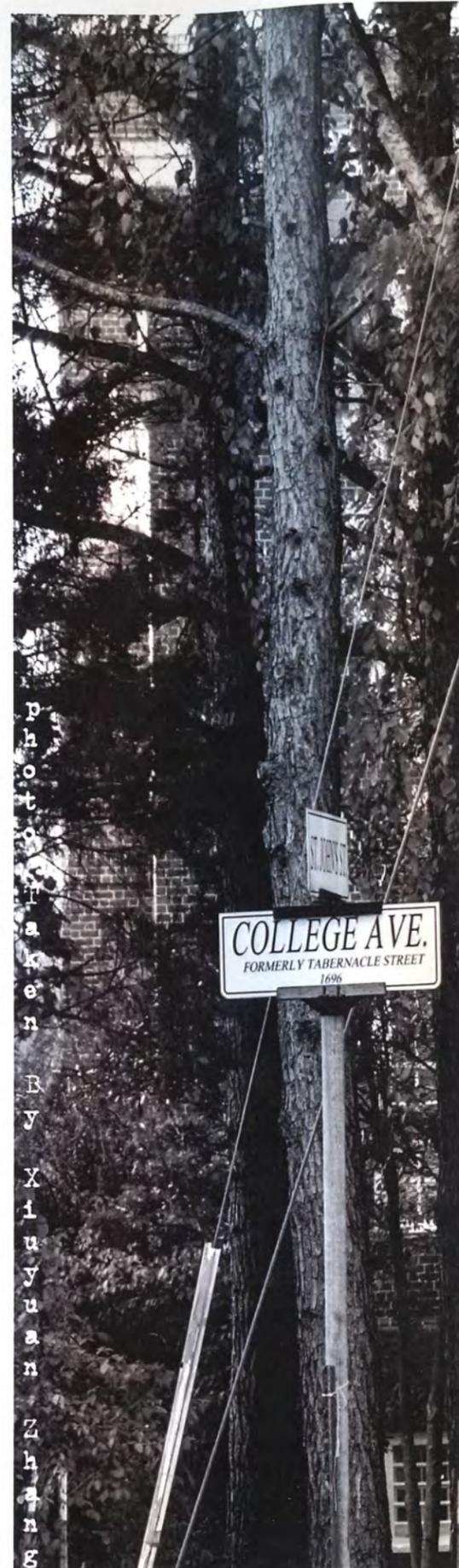


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istoria currently has two main sections. In the first section, which we call Dialogues, the *istoria* editor group presents interviews with tutors and students on subject matters that are related to the St. John's Program, study method, or questions one may have in the classroom. In the second section, there are five subdivisions where we publish short essays from the community members on subjects related to seminar book and four tutorial subjects: mathematics, music, lab and language.

Please Note:

In order to be more eco-friendly and ensure everyone who wants to read the *istoria* would be able to have a copy, we have decided to distribute our publication in the form of subscriptions (It is still free to all polity members). For our subscribers, we will send you a copy of *istoria* directly to you through campus mail.

For people who wish to subscribe for the future, please send an email to the *istoria* email account historiasjca@gmail.com by November 25th. Keep an eye on the community announcement for further details. In the meantime, there will be some copies distributed in the McDowell coffee shop, Mellon fishbowl, the library, and BBC.

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Submissions:

I. St. John’s Program-Related Academic Essays. Requirement: no longer than 7 pages when double spaced with font size 12.*

II. If you want to respond to the contents involved in the current issue (for example, if you have a thought on an essay or on one of the opening questions), that is always welcomed. Please submit your thoughts to *ιστορία*’s email account. **

*&** Both can be hand-written as long as they are legible. *ιστορία* encourages you to submit your sketches and graphs if they are related to your essay.

For Prospective Staff:

I. If you have a good work ethic (required),

II. If you are a photographer (send us an email with three photos).***

III. If you are interested in becoming a contributing editor of *ιστορία* (no prior experience required; send us an email including two of your writing samples along with why you want to be part of the *ιστορία* group).****

&* Part I of this section is required if you want to join *ιστορία*.

From Left to Right: (Front) Bonnie Scott, Jonathan Llovet, Xiuyuan Zhang, Nathan Huey, Ripley Stroud, Sihui Ma (Back) John Moore, Samuel Harder, Abraham Zhao, Alex Bianco, Joseph Garry, Olivia Frawley, Matteo Burrell, Seung-Eun Lee.

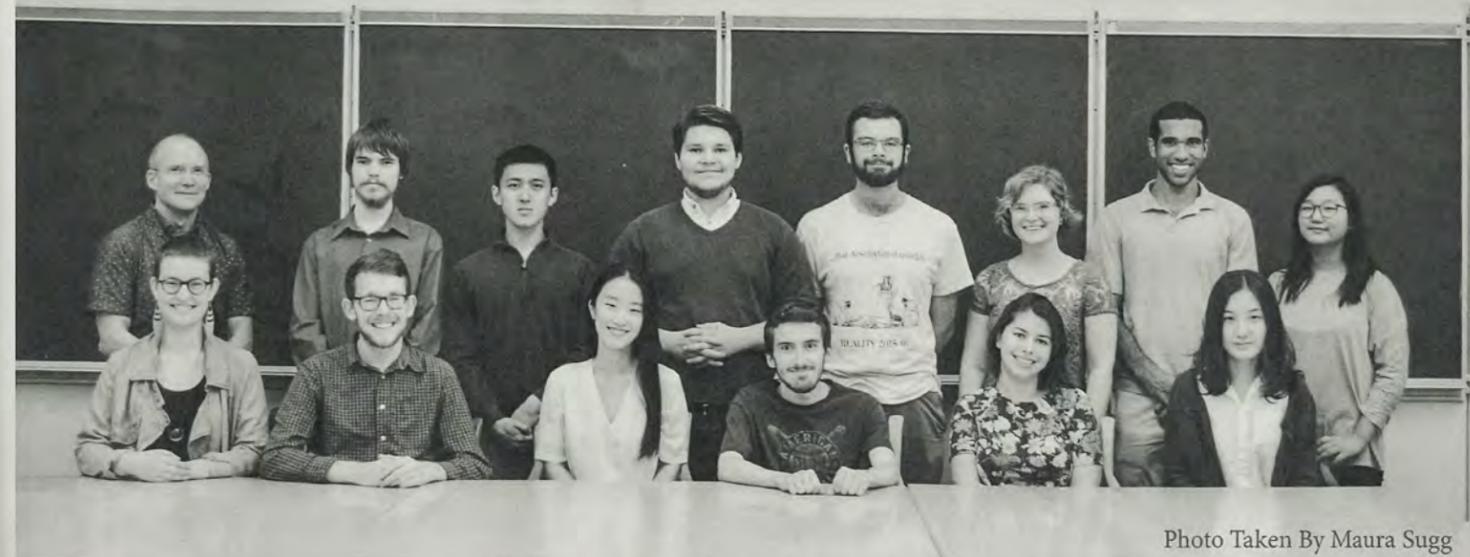


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Foreword

Dear Polity,

At the end of every academic year at St. John’s College, nearly a quarter of the students here will graduate and enter into their adult lives. Then, at the beginning of the next year, as many or more new faces will come to reinforce the ranks. The student body has always changed, but the spirit of inquiry has never – will never – *could* never – leave. As long as this college survives, inquiring Johnnies will want to know.

With this issue, *ιστορία* begins its second year of existence, and therefore its second year of offering a venue in which to pursue this inquiry. For the reinforcements lately arrived who therefore may not be aware: *ιστορία* is a student-run publication that aims to create an opportunity for every member of St. John’s College to dialogue about Program texts with the community; to share ideas – partially-developed or fully-formed – with others; and, through writing, to interact as an intellect with the whole community beyond the bounds of the classroom. Through tutor interviews and student essays, we intend to keep alive those thoughts that might otherwise die too young at 10pm on Mondays and Thursdays (or at 3:30pm on a Tuesday or 10:20am on a Friday).

We distribute *ιστορία* using a free subscription process. This means that when we put out new issues, we do so via the campus mail system. If you would like to receive a copy of our publication, please send an email to historiasjca@gmail.com before November 25th and write in the title: Subscribe/ Your Name. After that, nothing else is required but to check your mailbox; on three occasions during the remainder of the year, you will find therein the latest issue of *ιστορία*. (The subscriptions of those who signed up last year will be automatically renewed.)

Before we send you off to explore the forest of symbols contained in these pages, we would like to welcome several editors new to *ιστορία* this year: Mr. Matteo Burrell (A19), Mr. Alec Bianco (A18), Ms. Olivia Frawley (A18), Mr. Joseph Garry (A18), Mr. Samuel Harder (A19), Ms. Seung-Eun Lee (A19), and Mr. Abraham Zhao (A19). When this publication began, it was run by several juniors who already knew each other well; it is therefore exciting to see the growth of our publication into something that includes students across classes – many students, indeed, that we who started this magazine did not know at this time last year. We are grateful for their willingness to take part in this project and to make it something that will endure after our own graduation.

With that, we encourage you all to go ahead and read the articles and interviews we have compiled here for you! Our humble hope with this issue is the same as it is for every issue: that reading it might help you in some little way to find the answers you need to know and the questions you didn’t know you needed.

Dialogues

Mr. Christopher B. Nelson

Mr. Robert Goldberg

Mr. Louis Petrich

President: Mr. Christopher Nelson Interviewer: Xiuyuan Zhang (A17)
Mr. Christopher B. Nelson graduated from St. John's College in 1970, and he has been the president of St. John's College in Annapolis since 1991. This year Mr. Nelson is leading a study group on George Eliot's *Middlemarch* with Ms. Axelrod.

Ms. Zhang: We ask all of our tutor interviewees the same two questions to begin with: **what classes are you teaching this year? and what is your area of academic specialty?** Obviously the former does not apply to you, but do you have an answer for the latter?

Mr. Nelson: After I graduated from St. John's, I went to law school. I practiced law for eighteen years, so I suppose you can say that I have no area of academic specialty. But I have taught in the Program, both in the undergraduate and in the graduate institute, over the course of my years here. Anytime that I didn't have a class, I co-led a study group with Ms. Axelrod. I've done one or the other in every year I have been here. I think that I love that part of my work best.

Ms. Zhang: **This year you and Ms. Axelrod are currently running a *Middlemarch* study group. Is there any reason that this book called to you this year?**

Mr. Nelson: Well, I happen to love the book. Many students either write about it or consider writing about it in their senior essay; most of the ones that I have talked to are disappointed that Dorothea has given up the big grand vision of her project. And I rather do see her as a successful Saint Teresa, doing good within her community in dozens – if not hundreds of – small ways. I find her character to be a beautiful one, but the book is so rich: richer in terms of community and family life than virtually any other book in the Program. Eliot seems to have found a way to explore character and community dynamics in the peculiarly intimate environment of a small town that has a character of its own, perhaps not unlike St. John's College, where the small and intimate things that help us grow and evolve on an individual level do not get swallowed up by the larger world outside.

Mr. Christopher B. Nelson graduated from St. John's College in 1970, and he has been the president of St. John's College in Annapolis since 1991. This year Mr. Nelson is co-leading a study group on George Eliot's *Middlemarch* with Ms. Axelrod.

Ms. Zhang: Last year you were leading a study group on Plutarch's *Lives*. **How do you think**

reading *Middlemarch* is different from reading Plutarch's *Lives*?

Mr. Nelson: Doing Plutarch is like hiking the whole Appalachian trail. It is something that I wanted to be able to know I had done for the sake of doing it. And I hoped I could think through the character requirements of effective leaders on a grand scale. I think Plutarch's *Lives* is a very fine book, but there are fifty lives in it and it takes lots of work to go through them. Some are better than others, and few are connected to one another, so that it is more difficult to explore the dynamics of relationships upon character development. *Middlemarch*, in contrast to that, is a book that takes no work at all. It just begs for a kind of leisurely attention to the evolving relationships in a town that holds it all together, even though it too involves many inter-twined lives. Plutarch is of course also exploring character, but on a larger scale and in ways that rarely show the inter-relationships among the lives studied. I expect to continue rereading *Middlemarch* long into the future. I will only be doing that with a handful of Plutarch's *Lives*.

Ms. Zhang: **Off the top of your head, what single memory springs to mind most vividly for you when you think back on your undergraduate career at St. John's?**

Mr. Nelson: I think what stays with me most is my freshman seminar with Mr. Bob Sacks, and Mr. Louis Kurs. In our second seminar on the *Odyssey*, through the recognition scenes, the light came on for me when we were trying to determine when Penelope recognized Odysseus' homecoming. I think I found a way into that text that was more profound and a closer read than I had ever done in my life before that. I came to the conclusion that the recognition occurred before Odysseus actually arrived, and I remember Mr. Kurs pressing this question. I kept re-reading and re-reading as the conversation was going on around me, and every time I looked back at the text, another earlier recognition opened itself to me. And I think it was a lesson to me in reading – listening to an idea that I didn't have in my mind at all when I walked into the room. It also helped me to shape that idea over the course of two and a half hours. It was one of the only times that I was drawn



Photo Taken By Sihui Ma

to go back and re-read a part of the seminar reading immediately after the seminar was over, since usually we have to prepare for the next day's class. But that time I went back to my room and re-read it, and thought about it more. That sticks out more than anything else because it was such an exciting learning experience.

Ms. Zhang: A tutor once told me that each year in the College is a stage in itself, and the four of them taken together is a successive progression. What do you think about this characterization? Can you describe each year of St. John's with one phrase, respectively?

Mr. Nelson: It strikes me that the stages of learning in the student are quite different from the stages of civilization. So I think what is going on in the life of a student might very well be called stages where one takes more responsibility with each year. One may be able to define that in some way. But I am not sure that I am seeing the same stages of development in society. Probably there are stages, in matters of democracy and technology, which are reflected in the Program itself. But I like to think of the Program in terms of the growth of the student. And I think that we do a marvelous job of introducing the

students in the freshman year to the love of learning. I can't imagine a stronger collection of texts than we read in the freshman year – and one that allow for philosophical exploration. So it is preparing you for the rest of the three years. Then we think we do have stages which we are confronting ideas in very different forms as we go across those four years. The students open themselves to these in different ways. By the time that the students are seniors, they are capable of running their own classes and of having a sophisticated conversation, one that certainly reflects what they have done earlier but which usually reflects an extraordinary growth that occurs over that time. I remember when I first came here as president, I did the junior seminar. So, at the end of the junior year, I was in class with rising seniors; then I went back to the sophomore seminar in my next year here, and these were students who had just finished their freshman year. The difference in those two classes was extraordinary. And it was exciting to see the growth in the student that had occurred.

Ms. Zhang: You graduated from St. John's. Do you think that being in two different positions here – student and administrator – has given you a special understanding of the College?

Mr. Nelson: I suppose it does. I remember being quite surprised when I came back as the president at how little I understood about the College. I think the thing that surprised me most was the extraordinary depth of learning of our faculty. We know that they are restrained in the classroom and we know that they read through the Program over and over. They also are very well-read in things outside the Program. This is something that I could see in the interviews with prospective tutors. I thought that this depth added greatly to the strength of the faculty, probably making the restraint in the classroom all the more difficult for them. But I could see how it enriched the conversation in the College, both in the classroom and among colleagues. So, yes: I had a little bit of a different sense of it, but we are here for the sake of our students. And it is very easy, as an administrator, to forget students. So if there is any one thing that the student in me would tell the administrator in me is: don't forget the students. And that is one of the reasons why I try always to be in the classroom, to keep my own learning alive, but also to remind myself that we are here for the sake of those students in the classroom.

Ms. Zhang: What would you say to someone new to the College who feels nervous about speaking up in a classroom full of strangers?

Mr. Nelson: I guess I would say: this is probably as safe a place as one can imagine to speak up. I would try to encourage in the students the exercise of a little courage, which might feel reckless to them, but it is a loving and caring environment around them in the classroom most of the time. And people want to see each student speak up. I'd also encourage the student to speak one-on-one with the tutor before or after class to help fashioning some ideas that they feel the need to be more fully formulated before they open their mouths. The thing we learn the best in the College may be that we learn to think while speaking. And that is not always easy to do when one's first desire is to formulate an idea before speaking, since by that time that person is ready to say something the conversation has moved on. So one has to learn how to formulate ideas while speaking. It takes practice that the silent student needs to exercise.

Ms. Zhang: Have you ever experienced that kind of nervousness?

Mr. Nelson: I haven't experienced it in conversations, but I probably have given well over a

thousand speeches or addresses to one audience or another. And I think that many, many, many times I have been nervous about whether I had any idea what I was going to be saying and how it would come out – whether it would be intelligent or intelligible. So I am familiar with stage fright. But that is mostly gone by now.

Ms. Zhang: Thank you for sharing this with us. Now we proceed to the next question: In one of the forums last academic year, we talked about the low attendance of Friday Night Lectures for the past several years. Lectures are, I believe, nominally mandatory, and tutors certainly encourage their students to go to them. What do you think the Friday Night Lectures add to Johnnies' experiences? Do you have any hypotheses for why attendance at the lectures has been decreasing?

Mr. Nelson: What is your impression of how it is working this year?

Ms. Zhang: I think it is pretty good so far.

Mr. Nelson: So do I. I think that it is pretty good so far in part because the dean has made a special effort to encourage the attendance and to talk about why it is important. But it is also because we had a lecture schedule that our previous dean put together that has many people speaking on what the students want to hear. That is exciting. I think it is probably the tutor lectures that get the best attendance because students haven't really had a chance to hear what they really think about something. This is their chance to learn from them. So I think the lecture is an important aspect of the College. I only spoke once in the question period when I was a student, I remember. But I never missed a lecture or a question period; I felt a sense of duty called and I was glad I was doing it. I am one of those people who don't learn very well being lectured at; many people do, and can hear well, so it was one of those things that I had to work on. It was probably one of the hardest things in the Program for me – to sit and listen to a lecture. But I figured that if the faculty thought it was important, then I would take it in. And I think as a result I learned to listen better.

Ms. Zhang: The question always arises about St. John's: so how are you going to proceed with your liberal arts degree after graduation? We seniors are currently asking ourselves and each other that very question (or trying as hard as we can not to think about it). In this increasingly technocratic world

where “higher education” seems more and more to be equivalent to vocational training in a very specific field, what do you see as the role of the traditional liberal arts education?

Mr. Nelson: I think it is probably very difficult to give a “how to” answer to this question. What I hear from alumni over and over again is the same thing I experience myself: the richness of the Program, our four-year experience here at St. John’s, comes out without our thinking about it in every activity of our lives. And while we don’t come prepared in the traditional sense for a task, which is what we might be called upon to address in our first year out of school, it becomes quickly apparent to people around us that our graduates have learned something special here. They became people who have an independence of mind, who are not afraid to tackle a new problem, and who bring a kind of richness of imagination and a variety of solutions. I think it comes out in anything a student would choose to do. So it is kind of a cliché to say that this college prepares you for anything you want to do, but I nonetheless think that it does, because it helps students train habits of the mind, of the intellect, and of the imagination that will help them think about anything they need to work with in their professional life hereafter. Lots of people probably leave here not knowing just what they want to do for a career and stumble into the work that they are doing, I rather did; I thought my work as a trial lawyer was not a natural thing for me to be doing. I did not like it even though I was reasonably successful at it. So I was grateful to come back and work here. But there are other aspects of my work as a lawyer that were quite natural for me – it was the combat that made me uncomfortable rather than the negotiated solution. I think that each of us finds that there are certain tasks that we are asked to undertake in the world that we are more naturally good at, but I can’t think of any of them that is not enhanced by the experience here at the College.

Ms. Zhang: **What is the accomplishment you are proudest of during your tenure as President of the College?**

Mr. Nelson: Staying out of the way of learning, I think. Just as the tutor in the classroom must be reticent to enter the conversation, so, as the president, the best thing we who administer to learning can do is to help make available the things and opportunities that faculty and students require to get

the most out of their four years at the College. Then pretty much just stay out of the way and not put the impress of the office on any of these things.

Ms. Zhang: **Do you have any disappointments? If you do, can you see in retrospect how you might approach those challenges differently given what you know today?**

Mr. Nelson: I think all of my disappointments are actions that I’ve taken, or that we as the College have taken, that I wish I hadn’t had to take. But I wouldn’t do them differently under the same circumstances. The most important thing when you make a mistake or when you realize there is an alternative that is better than the course you have set yourself upon is to quickly change course. Simply acknowledge that the world has changed or I made a mistake, and go on from there. That’s something that I think I learned early in life, so I don’t carry the baggage of wishing that I had done something differently. Because if I thought that, I’d turn around and make the change now. But there are disappointments in the sense that there always seem to be things we have to do that we wish we didn’t have to do. It is usually the result of things beyond our control and the effect of the world on our more intimate environment.

Ms. Zhang: For the past few years, the College seems to have been undergoing lots of changes, from the rebranding project to the arrangement of tutors for senior class. **How do you see these changes affecting St. John’s in the long term?**

Mr. Nelson: I hate to see any changes in the classroom that are more than temporary. We have staffed the senior classes with a single tutor several times over the course of the last twenty or thirty years, maybe five or six times. We always want to bring it back to two-tutors seminars, but there were times when that just wasn’t possible – usually for financial reasons. With respect to rebranding, it is a word that I don’t like. I try to keep free of the economic metaphors in all of my conversations about the College. But there is a world that we need to appeal to and it has been difficult for the College to find its voice in such a noisy place. I am hoping that what we have now up on the website is a way of paving the route more correctly – that is, we’ve got our authors speaking on the website and we have our students speaking as well. I can’t think of anything that is more important than what is coming from the books and what is coming from our students in desc-

-cribing what the College is. We did have some advice along the way that this is not the way we ought to present ourselves. I never thought well of that advice. But it was also clear that we weren’t reaching students that would benefit greatly from the College and would love to be here. So we are trying to find ways of reaching them that are true to us.

Ms. Zhang: **What are the reasons that a particular Program book is added to or dropped from the Program?**

Mr. Nelson: There might be several. I sit with the Instruction Committee but it is the Instruction Committee and the dean that make these decisions. So when you have a conversation with Mr. Macfarland, he may be able to give you the better answer because in the end the decision would be his, or his in conjunction with tutors on the Instruction Committee, or perhaps with the dean and the Instruction Committee in the Santa Fe campus. One reason something is added is that we discover that there are new materials we didn’t know about or that might not have even existed until ten, twenty or thirty years ago. This is particularly true in the laboratory program: since there have been all these new developments, we are trying to find the texts, books, articles or journal entries that better help us probe the depth of the changes in modern biology, quantum mechanics, or whatever it might be. That would be one reason.

Another reason would be that whatever we have is just not working, that we think it is a great book and we’ve got lots of good questions about it, but it isn’t opening itself up somehow to the students in the class. Every now and then, that frustration builds and we say, “Let’s see whether we can find another book that still fits within the general shape of the curriculum but works better.” That would happen probably more frequently in the case of the seminar program. In the case of the tutorials, it is sometimes the question of the difficulty of the text, and sometimes a question of whether or not we could approach the material in ways that are easier for students who may not be as familiar with the mathematical symbols, for example, or struggling with a foreign language. So these are the things that we might try out. Then there are times that the shape of the Program itself takes a turn, and we need to find books that will help us explore that, although we don’t see that as often now as we did in the earlier years with the

Program. But the music tutorial has undergone substantial shifts overtime; some of it is in order to aid pedagogy, but some of it was simply to build a substantial program. That was also true of the laboratory tutorials over the years.

Ms. Zhang: We touched upon the change of materials for tutorials and seminars; now I would want to ask you about the selection of Program books in general. Since the period of ancient Greek philosophy, which is what we start with in freshman year, there have been many philosophers, including the ones we read about and the ones that are excluded from the Program. **Do you see an actual divide between Program and Non-Program books?** It seems to me that St. John’s has taught me to interact with lots of “Great Books”, but is that in any way neglecting everything else that has been published – that is, the “not-great books”?

Mr. Nelson: Mostly, we restrict ourselves to the books we have because there is only room for so much. We are interested in first understanding the elemental and foundational questions. And it happens that many of the earlier philosophers were very good at addressing them. But I think that the faculty reads widely among texts that are not on the Program, and these books have their fans and people will advocate for their inclusion in the Program, and we will allow changes to be made. I suppose there is a certain amount of inertia: we ask, “What is the foundation of the Program?” and for most of us it is what we were doing last year. And that is what we are dealing with, and then the question arises: what do we change? It takes an effort and an education to reflect back to our beginnings and our roots as a College, and ask ourselves whether we’ve strayed from that in a way that is healthy – whether we’ve grown – or whether we’ve strayed from it in a way that has been unhealthy. That might prompt us to revisit some of these texts and these other philosophers. So it is a constant conversation. In many parts of the Program we see things working quite well, so we want to be very careful before making changes.

Ms. Zhang: **How would you compare yourself now as an intellectual and emotional being to who you were before you set foot on the campus of St. John’s as a student?**

Mr. Nelson: I think it is mostly the growth that sets in with age, and I am probably less impulsive today than I was as a high school student. My

ambitions are a little bit different; that is to say that it was very important for me to succeed and to win, but now it is more important to learn and to listen.

Ms. Zhang: What role did your education in St. John's play in shaping who you are or influencing your growth?

Mr. Nelson: I think it must be huge. It is hard for me to see; that is, we are our own mysteries to ourselves. And when I talk about things that influenced me in life, I am constantly referring back to the books we've read in the Program. The metaphors that help explain the situation that I am dealing with seem to always come from the books. So even if I am not consciously thinking about it, when I reflect on what I just said or what I just did, I realize that the books and the experience of the College have been so alive for me in a way that I continue to live with it as an active part of my life.

Ms. Zhang: The Johnnie education is a demanding one, and we're all busy with schoolwork, employment, extracurriculars, and probably other things I can't even think of right now. **Do you have any advice to us about things we should be sure not to miss out on – any things we might not even notice missing out on but that we'd regret down the road if we neglected?**

Mr. Nelson: The Program is endlessly deep and difficult. One can't master any of these on the Program. At the same time, the faculty has made some choices on what they think is best. And I think it is very tempting, as a student, to find a thing you really like and want to dig in. Sometimes you might forget to do your homework for the next class be-

cause you are so interested in diving into the things that you love. My advice would be trust the faculty's choices and work through the texts in the Program. There will be a lifetime in which you can go back in and specialize. The world is going to demand that you to specialize anyway. You can always go back and pick up these things, but it is very hard to attend to the Program if you fall behind, miss a class, or spend too much time on extracurricular activities. So I would always put the Program first, because it is going to be very difficult to put the Program first after you leave. And the Program is what makes us St. John's College. If you are here for that, put it first, and everything else can fall in place. There is time for other things in our lives and the College is also taking care to make sure that there are other opportunities available for students. And if there is time to pursue them, we don't want you to simply spend your four years with your noses in the books, but to enjoy the friendship this community can bring about and the kind of conversation that can occur outside of the classroom, on playing field or in the opportunities for writing, play-acting or whatever it is. I think that we try to be careful with it, but it is a demanding Program and you could easily spend the rest of your life doing nothing but reading these books. So balance is important. You can get yourself out of balance simply by ignoring some aspect of the Program; then you would find yourself hopelessly at a loss, and I would hate to see that happen to the students.

Ms. Zhang: Thank you, Mr. Nelson, for sharing your thoughts and advice to the community. It is a pleasure to have an interview with you.

Tutor: Mr. Robert Goldberg Interviewer: Abraham Zhao (A19)

Mr. Robert Goldberg has been a tutor at St. John's College since 1995. This year he is teaching freshman language, senior math, and freshman seminar. His academic specialties are ancient Greek, classical literature, and political philosophy.

Mr. Zhao: You studied both at St. John's and other institutions during your time as an undergrad – **can you briefly describe the educational path you took between leaving and coming back to St. John's and tell us about what led you to take those roads?**

Mr. Goldberg: Sure. I was a freshman twice at Columbia University before I came to St. John's. So I came here for a specific purpose: Columbia didn't offer what I considered a coherent liberal education. By the time I finished my first semester of sophomore year at St. John's, I realized I wanted to keep studying Greek as well as the moral and political philosophy of Plato and Aristotle. So I applied to Harvard, where I did what amounted to a Greek major and half a government major. In the government department, I could study not only ancient but also medieval and modern political philosophy. After Harvard, I did a PhD in political science at the University of Toronto. In 1995, after teaching at Toronto and Kenyon, I returned to St. John's.

Mr. Zhao: **As a former student, what is the text you found most interesting to revisit coming back as a tutor?**

Mr. Goldberg: So I was only revisiting freshman and sophomore books. The books I found the most interesting to revisit were the *Theaetetus*, the *Physics*, the *Metaphysics*, and Descartes' *Discourse* – books one doesn't ordinarily get to study or teach in political science. Other dialogues we read here and books like Machiavelli's *Prince* and *Discourses* for instance, I'd done elsewhere. But the others I had no exposure to once I left St. John's, and I found them very important to revisit. In fact, it's one of the reasons I wanted to come back as a tutor: to read books outside political philosophy, as well as to do the math and science curriculum.

Mr. Zhao: **So then, out of the things you didn't get to do, what surprised you most about the junior and senior years?**

Mr. Goldberg: How powerful junior and senior math are. I had heard from upperclassmen here, when I was a student, that junior year was the other peak of the Program. Freshman and junior years were the two peaks, perhaps because junior year is some-

thing like a return to freshman year, with something new in the world, exciting advances in math and the sciences, and philosophy reborn. And the math... well, Newton is extremely powerful. He proves that the same thing that makes this pencil fall to the table keeps the moon in orbit around the earth, and he does that with Euclidean geometry and some Apollonius. As Ms. Axelrod once put it to me, "it's Apollonius with a twist" – with the added notion of a limit. That was all very compelling to me.

Then senior math: as a freshman, I would hear seniors in the dining hall (the parents of some of my students!) talk about non-Euclidean geometry and think, "I don't want to stay here for this wacky stuff; if this is what the college does to you, I'm out of here." Then, 10 years ago, I read Lobachevski. He calls into question the one science we all thought we knew and shows that we *never* knew it – perhaps it was *never* true. Then of course, second semester, these things we took for granted – space, time, and motion – they all become conjoined and everything we thought we knew about them proves to be wrong. We live in this in-between world that turns out to be much larger than the tiny quantum world and tiny compared with the whole world. We thought that whatever happened on a St. John's chalkboard happens everywhere else in the universe, but both Lobachevski and Einstein dismantle that notion and overthrow many of our deep convictions about the world. That's what surprised me most.

Mr. Zhao: Okay, so going back to Greeks, given that you have a lot of background there and were the freshman language archon last year, I'd like to discuss language with you. You've often mentioned that accuracy is one of the – and perhaps *the* – most important thing you consider in determining a good translation. **What does accuracy mean to you?**

Mr. Goldberg: Well, in freshman seminar, we're reading authors who wrote in Greek. And we have to read them in English. I want, and the college claims that we have, those teachers returning next year – Plato, Homer, Sophocles. How do we make them our teachers when we're reading them in translation? All of them wrote with exquisite care. Who

takes that kind of care in translation, such that somebody who knows Greek and looks at that translation can more or less see through that English to what the Greek was? And this is very important for students who don't know much Greek. If we want those thinkers to be our teachers, we need to make sure that the English translation stays as close as possible in English to what they wrote in Greek. So accuracy in part means choosing the right word, such as justice for δικαιοσύνη, or the noble or the beautiful for τὸ καλόν, especially for key terms like these in our readings. And then it means consistency – not changing the English word whenever the translator thinks it has to mean something different. I think the best translators in English manage to do that, and it often requires a glossary plus footnotes along the way, permitting the Greek-less reader and those who know some Greek to judge for themselves whether the word that has been translated a certain way should have been translated this or another way.

Also, I think a translator should not work into the translation his own interpretation of the text. I have a list of recommended translations. Not all freshman books have great translations, but many now do. And I state my principle for selecting those translations and am happy to discuss them further with students and colleagues.

Mr. Zhao: **What are some of the pros and cons of having different translations in the seminar?**

Mr. Goldberg: I think it hurts more than it helps, when there are accurate translations available. With Thucydides, for instance, it's pretty much hopeless. I've translated a lot of Thucydides and use the Loeb, which I think is a little stronger than, say, the Landmark. But \$100 for four mediocre volumes is too high a price, and the Landmark is fine; the translation is often weak, but it has a lot of helpful maps and pictures that students appreciate. When there isn't a simply good translation, then as long as the translations students use have the standard book, chapter, page, and line numbers, that's fine. I've heard people say it's good to have multiple translations in order to discuss the differences, but the problem is that beginning students aren't competent to judge the translations and it comes down to "Which one do I like better?" rather than "What did the author actually say?" When I teach freshman seminar, I always have the Greek text with me, and if contro-

versies arise, I can often resolve them. I do think it's an advantage in freshman seminar if at least one of the tutors knows Greek well enough to do that. After all, we're teaching Greek here too, and we can show students the benefits of learning it.

I think where good translations exist, we should use them. Different tutors may have different standards for what a good translation is, so we may never reach full agreement. I feel it is my duty as a tutor who knows Greek well to recommend translations to freshmen. If I'm doing junior or senior seminar, I ask my colleagues to recommend translations in languages I don't know well. But for Greek, it's something I can do for freshmen. There are two excellent translations of the *Meno* (one by a former tutor of mine, the other by a former student of mine), for instance, that I highly recommend and would urge students to use for seminar. The best translations are so good that if – God forbid! – the original Greek texts were lost, I think we could recover the teachings of Plato and Aristotle. That's the kind of bar I set for accuracy in translation.

Mr. Zhao: That's very well said, and it certainly shows your closeness to the language. I'd like to ask about your dedication. The importance of "awe" and "wonder" is stressed in some philosophy. **What keeps you in awe of Ancient Greek?**

Mr. Goldberg: So, philosophy supposedly begins with wonder; Aristotle says something like that, borrowing from the *Theaetetus*. I wouldn't say I'm in awe of Greek – I would say I'm in love with it. I love it in part because of how rule-governed the language is. I love teaching Greek, something I likely wouldn't get to do at any other college in the world. But I get to do it here. I have a firm grasp of it, and love teaching freshman and sophomore language for that reason. It's beautiful – I want to say it's a more rational, more intelligible language than English is. You can learn paradigms, learn rules, and if you apply them to new things, they work! – most of the time. And as you get advanced in Greek, there are many subtleties and nuances in the meaning of passages that come to light for you.

Also, there's so much Greek that has come into the English language. If you understand the Greek that English words have come from, it brings English to life. All of a sudden, these words are alive and meaningful in a way they weren't before. My language students and I love finding some of



Photo Taken By: Seung-Eun Lee

these etymological roots. One common example came up the other day: we were talking about δεινός, terrible. And then I put up the word, as well as the word for lizard, σαύρα, and suddenly – dinosaur! Terrible lizard. The word instantly had meaning that it had never before had for my students.

Of course, what's most important to me is the access that Greek provides to Homer, Plato, and the other authors we read. That access allows Plato and Homer to talk directly to me. When you look at something in English, some things go, so to speak, in one ear and out the other. But in the original language, they leap off the page, because they're fraught with meaning that simply can't be conveyed in translation; or the English words are just too familiar to strike us. For me, studying Greek is not an end in itself, even though I love it, but it's for what it opens up to me and my students. If you want Plato, Homer, and Sophocles to be your teachers, learn Greek. Then they can become your teachers in a way that they can't quite come to be in English.

Mr. Zhao: That makes sense to me. But then the question arises, why do we want to keep Latin opaque? If I understand correctly, the Col-

lege used to do four years of different languages: Greek, Latin, German, and French. Do you think it makes sense to make the extra investment in Greek at the expense of Latin?

Mr. Goldberg: Yes, I do think that. Because you learn so little of a language when you learn just some of its grammar. I also think Greek is more important than Latin. I studied Latin intensely in both high school and at Columbia, and never looked at a word of Greek before St. John's, and still think that. A lot of the Latin authors seem like dim reflections of Greek authors to me. That's not a simply fair judgment – one might be able to learn as much from Cicero as from Plato, Virgil as from Homer, but the originals just have greater power with me. And I think it's very good to go deeper into Greek. You learn more about language the further you go into one. Rather than learn the "beginnings and then a little bit" of four languages, it is much more helpful to go deeper. I don't know why the choice was made to eliminate two languages, but I do think the right choice was made. A few tutors have stated at faculty meetings that they would prefer to do four years of Greek, and I love that idea, but I know something

important would be lost by not doing French. I do think we should spend more time on Greek than we do. We could do two full years of Greek, or do Shakespeare and English lyric poetry only after spring break.

Mr. Zhao: Conversely, to play devil's advocate, **why would you say we should keep some of the English elements of the language tutorial? What's their importance?**

Mr. Goldberg: I view it as an opportunity to look at some other things, like Shakespeare, in depth. We can spend four weeks on a Shakespeare play, and that's great too. My personal emphasis in language tutorials is not so much on language, as on the books that the language enables us to read. Those opportunities are very important for our students: to read not just Greek authors in depth and in Greek, but to read Shakespeare and some very fine English poetry. There are just too few places in the program where we get to slow down, burrow in, and really study a book. The second half of sophomore and senior language are two places where we get to do that, and preceptorials are another place, but that's just half a semester, not enough time.

Mr. Zhao: Regarding the unique format of a St. John's education, **what do you think the don rag achieves? Put differently, what are Johnnies getting with a don rag that other institutions of higher learning don't give them?**

Mr. Goldberg: They get a much fuller take from their teachers on what they are like as learners – what they appear to be like to a fairly well educated eye. Some tutors are better at this than others. I am not one of the better ones; I'm always amazed at how closely some of my colleagues are able to follow their students in class. But to hear what you're like in class, what challenges have been or need to be overcome, the quality of your preparation, how you interact with other members of the class in the collaborative effort, get four or five snapshots of yourself as a learner – here you have students whose teachers take a personal interest in you that I've seen at no other college. That's one very nice thing about St. John's – you can become a better learner by paying close attention to what your tutors have to say about you.

Mr. Zhao: **Do you, as a tutor, gain something from giving don rags?**

Mr. Goldberg: Sure! Sometimes it's shocking to hear how a student is doing in another class. Perhaps a student in your class never talks; then you hear they're leaders in another class. That's very important to know, because it puts what you're saying about your student in your own class into a context. You can reach out to the student and say, for instance, "When you ask a question when you're lost in lab – do that in seminar!" And the student's face or words more often than not suggest, "I never thought of th-

-at." Another important thing: I learn from listening to my colleagues how I might do things differently in my own class. You hear some of this in archon meetings as well as don rags – just how other tutors handle the material – and that can be very helpful for revising your own approach to the same material.

Mr. Zhao: **Not only last year, but also this year, you led both a freshman language class and a freshman seminar – did you find that benefited you in helping students' comprehension in either class? Because I imagine the answer is yes, how so?**

Mr. Goldberg: That's a good question. I can readily bring things into freshman language from seminar readings. I can bring in a word or sentence – and it's especially nice when it's something we're learning – and say "so-and-so said this last night, and this is the Greek for that." I can point out interesting problems in certain translations of, say, the *Meno*. I know where my language students are in seminar and roughly where my seminar students are in language, and can bring into my freshman seminar useful points about the Greek, which really helps integrate the education students are engaged in. Another thing I can do is have us discuss texts like the *Meno* in the language tutorial. It helps us supplement the one paltry night we get for that dialogue! To be able to have a discussion on the *Meno* when we've *all* just read it, and likewise for Sophocles, when it's also fresh in my mind, I can point to places where it's relevant to our class. It helps the students see the point of learning Greek when I can put it in the context of actual books they care about.

Mr. Zhao: So, through some chitchat and gossip I've heard from my peers that many of them from your seminar last year really enjoyed the dynamic between you and your seminar partner, Mr. Braithwaite. This might be the hardest question I'm going to ask you: **what are some ingredients for a good seminar?**

Mr. Goldberg: One thing I find good for a seminar is to have tutors who help each other out. It often works out that the tutor who asks the opening question somehow has primary responsibility for the night. If it's Mr. Braithwaite's opening question, I might help develop that question over the course of the seminar, help to bring the conversation back to that question, and bring us to passages that bear on the question.

Mr. Braithwaite and I often agreed on what the important questions were. We didn't necessarily agree on the answers. That made for an exciting dynamic – though you'd have to ask the people you were gossiping with – but for me, it was fruitful. We're making cases, through our questions and occasional comments, for somewhat different points of view, and that allows us to play off of each other but also to have what amount to objections to our own views and that's very useful for me to take to heart and to think about – and for the students to hear and participate in.

I also think it's helpful to have at least one of the tutors know the books and original languages very well. Of course we always pair new tutors with more senior ones, but if I were teaching senior seminar for the first time, it would be very helpful if my partner knew Hegel or the Russian authors very well, and perhaps, as has happened, some German and Russian as well. I'm giving you a tutor's-eye view here. My memories of my own seminars have grown dim with the decades, but I do remember that some tutors insisted on rigorous thought well-supported by passages in the text, and I found that very helpful; so it's what I try to provide to my students. Of course, we all learn differently and maybe that's not helpful for everyone, but it's what I found valuable as a student and accordingly one of the things I try to do for mine.

Mr. Zhao: **What do you home in on as something like a 'goal' for seminars?**

Mr. Goldberg: In seminar, my mind is first and foremost on the books and the questions. I'm really looking to understand the text and for my students to understand it. Also, for the students to become aware of what's really at stake for them in the books. The way in which they're bringing their opinions to the book – for instance, someone might say "I disagree with Plato." We're here to examine our own opinions with the help of those whose opinions, we should take for granted, are wise. And we have to learn from *them*, not *them* from *us*. So how do we get students to open up to being taught by Plato? You have to make the connection between what might seem to be an abstract question like "what is virtue?" and our own concerns as human beings, because we don't talk about "virtue" anymore. So we have to say, "Well, what do you think it means to be a good person?" or "How does the question Socrates puts



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to Meno here bear on what you think a good person is?" Because when you say, "so-and-so is a good person," you are claiming, like Meno, to *know* what virtue is. We are ignorant and must become aware of our ignorance, just as Meno has to but never does and never will.

So, how do we do that? If you can genuinely come to know that you don't know what justice is or what virtue is, that would be a momentous breakthrough, and the first step in a genuine liberal education, *so* hard to achieve. We are Meno, we want to become Socrates. How do we make the transition? I view my role as trying to lead students in the direction of making that discovery for themselves. They think they know something of fundamental importance to their lives and *don't* know it. And help them to feel the urgency of coming to know what they always thought they already knew. In the context of the *Meno*, what are the obstacles to his taking that first step? The dialogue reveals the obstacles within him that prevent him from recognizing his ignorance of virtue. What are they? That's an important question. They're in us, too. *Why* are those obstacles in Meno? Another important question. Or if studying the *Iliad*: in book 9, what insights does Achilles really have into the life of heroic virtue and what insights does he fail to have? That's an important question, and Homer can help us see why and what the answer is, just as Plato can.

Mr. Zhao: Can you say more about Platonic dialogues? Because of their format, they seem kind of like plays, but their content makes them feel like treatises. **How does a Platonic dialogue differ from a Euripides or Aeschylus or Sophocles play?** *Mr. Goldberg:* The simple answer is this: in a Greek tragedy, unlike a Platonic dialogue, there is no wise man present. Life is shown as it appears in the absence of wisdom. In the light of human wisdom, life is not tragic (which does not mean it is free from sadness). The tragedies of Aeschylus, Sophocles, and Euripides do not and perhaps cannot present the lives of Aeschylus, Sophocles, and Euripides themselves. Tragedies abstract from the life of wisdom.

The Platonic dialogues are not tragedies. They not only present the life of a wise man, they are about that life. And arguments actually made by a wise man are presented in the dialogue. That doesn't happen in tragedy. It would ruin a tragedy.

So in Plato we have a wise man's thought or at least his speeches to examine.

As far as I recall, no tragedy I've read has a character who, for instance, knows what virtue or justice is and then proceeds to show us – not even in the very indirect way that Socrates does. What would happen if, when Oedipus said, "We must find the killer of Laius so that justice can finally be done," Socrates stepped in and said, "Um, excuse me, Oedipus? Can you teach me what justice is?"

Tragedy takes place in the presence of ignorance, in the presence of men and women who – to borrow Socrates' famous formulation from the *Apology* – suppose they know something noble and good but do not know. In the *Laws*, the Athenian Stranger says that the most noble and good life, or the mimesis of that life, is in fact the truest tragedy. Tragedy takes place – we could also say – in the absence of self-knowledge, precisely the sort of knowledge Socrates spent his life acquiring by examining himself and others. Oedipus is the most spectacular case of the lack of self-knowledge: he does not even know who his parents are, much less what a human being is.

Mr. Zhao: Finally, a very important question for some of our readers: **What advice do you have for someone looking to get better at Ancient Greek?**

Mr. Goldberg: The advice I give my students and the advice that worked for me: learn your paradigms. Write them out, keep writing them out, write them out until you're so tired of doing it that you have no choice but to memorize them. When learning Greek, there's no avoiding memorization. Sing paradigms in the shower, make poems out of endings, whisper them to your boyfriends and girlfriends – whatever you have to do to learn them, do it. Another thing I recommend that I did myself is to take a look at other introductory texts and grammars that might phrase things in a way that is more intelligible to you than Mollin-Williamson. I think our textbook is on the whole a lot better than others, especially for understanding Greek verbs, but it still helps to look at other resources. I also urge students to seek out Greek assistants and ask their tutors. But a lot of it really comes down to memorization. And whatever tricks or mnemonic devices work for you, use them.

Tutor: Mr. Louis Petrich

Mr. Louis Petrich has been a tutor at St. John's since 2002 and is on sabbatical this year in Bonaire, a small Dutch island in the southern Caribbean, where he is scuba diving, mountain biking, reading, writing, and drawing.

Mr. Moore: Please tell us what you did before coming to St. John's.

Mr. Petrich: Before coming to St. John's, I was making a career for myself as a teacher of "American Studies" in former totalitarian communist regimes, which were then in a revolutionary mode of opening their borders, systems, and minds to new, formerly forbidden things emanating from the West, and especially its vanguard, America – my subject. This all started for me in 1990 after the fall of the wall, and lasted until 2002, when the world changed again with the fall of the Twin Towers in New York and the turn of minds to terrorism and war. In those dozen years, I taught mostly American literature, history, political thought, and some visual art to university students of Romania, the Czech Republic, Slovakia, and Kyrgyzstan, and I delivered visiting lectures throughout the Central Asian states of the old Soviet Union and the countries of Eastern and Central Europe.

Mr. Moore: And before that?

Mr. Petrich: Before that, in the 1980's, as a graduate student minding my own studious business in Chicago, I had absolutely no idea that I would become an expatriate among eastern peoples, whom the common wisdom supposed would remain enemies, but who became our friends almost all at once. Of course the people themselves were not our enemies, as I experienced everywhere I journeyed in those beautiful lands. The regime was the enemy, and it was fallen and disintegrating. Anyway, when 9/11 happened, I had been living two years in Bishkek, a Russian fort-turned-city to subdue and civilize the nomadic descendants of Genghis Khan, located 800 miles north of Osama bin Laden's base in Afghanistan. We all knew at once over there that war was coming to our region, and that the honeymoon years of the 1990s were over and done with. By then I had a wife (met in Czechoslovakia, which split peaceably in two while we lived there) and a three-year old son, and the huge shift of American resources from education to destruction were pointing us back home.

Mr. Moore: How did you find out about St. John's?

Interviewer: John Moore (AGI15)

Mr. Petrich: I sent a message to a professor friend from Chicago, who had long connections to the College, and he put me in touch with the Dean. An application was submitted, accepted, and half the world was flown over in January of 2002 to make an interview in Annapolis. I almost choked to death at lunch at Galway Bay. That August, to my surprise, I found myself teaching freshmen to observe and draw the parts of magnolia trees and to ponder the point that has no part to draw. At night, at home in Severna Park, while reading Homer about hospitality and the plunders of war, my feet luxuriously rubbed the intricate silk and wool carpets we brought back from the steppes of Asia, as parting gifts or cheap purchases in markets suffering collapse. Funny, isn't it, to think that Osama bin Laden brought about my coming to St. John's College and much of the décor of my home? But I guess that's how things happen to us in history – Tolstoy superbly shows this – and many tutors older than me, or passed away, could have told similar or more dramatic stories from worse times.

Mr. Moore: Are there significant differences between the students you taught overseas and the students you teach at the College?

Mr. Petrich: I was sorry to leave my European and Central Asian students, for I came to love them and the life of a semi-itinerant teacher, poor but free. They wanted to know how to make it in the world, being much poorer and unsurely free, not wanting to remain poor and not willing to wait long to be happy. Students in America – a rich, strong country, long free, long experienced in the pursuit of happiness – fear too much for their futures. That's just crazy to me. I'm so glad that not this kind of student comes to this college. Aristotle's first virtue is courage, and he's right about that, for it's the condition of all the rest of the good things. It's not so hard here to meet the future bravely, as it is over there, for them.

Mr. Moore: Has your experience teaching abroad and in community seminars changed the way you teach at the College and Graduate Institute?

Mr. Petrich: I talk a lot more in community seminars, as I did when I taught abroad and it was expected of me as part of my subject. I have noticed

that as I grow older, I talk more in classes, though not yet so much as to have deserved a Don Rag by the students. I have an acute sense of time passing, as Descartes did, and even though I keep telling myself that the soul is immortal, I don't want to end in mid-sentence, my time stolen away, someone else left to complete my thoughts.

Mr. Moore: I have to ask this, because everyone always wants to know: **Do you have a favorite program book?**

Mr. Petrich: At the moment, because I happen to be reading it in a Graduate Institute seminar, my favorite book is St. Augustine's *Confessions*. But this changes according to the needs and chances of life and schedules.

Mr. Moore: **Why this text in particular?**

Mr. Petrich: Augustine wants answers to his questions, and rhetorically speaking, his *Confessions* are magnificent in wanting what they get. If you pay attention to how the numbered sections move forward, as he keeps pressing the question and deepening the answer, you find yourself wanting those answers desperately for his sake and your own. He challenges us at the College, because sometimes it seems we ask questions in order to generate more questions. Perhaps we don't want answers because we're afraid we'll be done, the conversation will stop, and then what? But questions should be for the sake of answers; otherwise, it all seems to me a kind of vanity.

Mr. Moore: **Do you think Augustine is somewhat unique among the Program authors in that he writes that way?**

Mr. Petrich: No, there are many others. Kant, in his *Grounding for the Metaphysics of Morals*, begins to give an answer to the question of what the good is in its pure form – and by the way, it's not the road to happiness for him. Aristotle, too, of course, answers what happiness is and how to achieve it. But if Augustine is right, then farewell to achieving happiness in the way of Aristotle, by means of one's own virtues, or to achieving the good by way of Kantian practical reason. So these authors, and others, all challenge us to answer the questions of happiness and goodness for ourselves, because after all we have our lives to live, and we don't want to get these answers wrong.

Mr. Moore: **What about Plato?**

Mr. Petrich: No, Plato is very tricky that way.

But I do applaud Socrates' creed in the *Meno*: the answer comes when and how it comes, but if not, and until then, you'll be better for trying. However, I was speaking not so much about the authors in the program as about the modes of learning and discussion at the College. Our mode of inquiry is to be properly skeptical and to ask genuine questions. And I think that these are the right modes. Yet often time runs out and we never get an answer to our questions, especially in seminars. But with Augustine, time doesn't run out before you get the answers that you must have in order to reach a satisfying end. Have you ever reached an answer to an opening question in seminar?

Mr. Moore: No, I've never seen an opening question get answered in seminar.

Mr. Petrich: That's a little bothersome to me. Why should an opening question never be answered? Would it be like death?

Mr. Moore: Well, I always thought that "good" opening questions were those that could not be answered because they served to stimulate discussion and inquiry and generate more questions.

Mr. Petrich: Well, I think you should expect to get an answer. I don't think you should expect to get it in the two hours of seminar discussion, and it shouldn't be easy, or like the end of *Job*, when you give up to the bullying of the whirlwind. But if you're asking a question just to keep the conversation going, well... that's not what I'm in it for. Of course you have to be patient; I'll ask lots of questions, but in the end I want some answers. A lot depends, therefore, on our sense of beginnings, middles, and ends – that is, on the felt plot of our human lives. We have been given a certain short time to arrive at meaning – and there an end. Unless there is no plot to life, no meaning to arrive at, no ends, no good bridge to the next unknown, which I see you are about to question, so let's get there.

Mr. Moore: I remember the opening question from my seminar on the first books of Plato's *Republic* – it was Ms. Seeger's opening question – that illustrates what I am talking about. The question was, "Why does Thrasymachus blush?" There were a lot of answers and we never agreed on a single one, but it led to a great discussion.

Mr. Petrich: That's a great question to ask. It shows that Thrasymachus is capable of shame, because he cares about certain things. He's not some-



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one who lets everything slide off of him. He cares about being right or wrong, particularly in public, which means he cares about the truth of the matter, and that is what makes him vulnerable to Socrates and interested in remaining present to the conversation. He's not after power and pleasure no matter what, because if that were so, he wouldn't blush, he'd be shameless, like Falstaff, who's able to twist and turn and respond to every challenge, as if even defeat were a mere occasion to exercise lively wit. There are boundaries with Thrasymachus. So that's why Ms. Seeger asked you a good opening question: it's deep and ongoing, but it has answer points, on which basis you can gather yourself together and then proceed to go on and gather more. I'd like to ask, "Why does Socrates never blush?"

Mr. Moore: **Let's go back to Augustine for a minute. You said he was looking for answers, but to what questions?**

Mr. Petrich: Whom to love? How, and how much, to love? What to give oneself up to, partly or utterly? He could have chosen to live an ordinary life by getting married, teaching rhetoric, making money, and enjoying the approvals of being a successful Roman citizen of his time. These questions, which

he answered, made him chaste and utterly devoted to God and his Church.

Mr. Moore: **Doesn't it seem like he was limited in his choices for living life? I mean, it was either an ordinary life or Christianity. Why do you think he didn't consider other options?**

Mr. Petrich: He did. But the most serious options were the pagan philosophies that taught people they could be happy if they practiced one or another set of virtues. That teaching is what Augustine attacks. It is the burden of his *Confessions* to demonstrate, "I tried their proud ways to be happy, and I couldn't do it. Nor can you, reader, for you are not different from me." But there's another way to look at this question that might avoid your sense of either/or. The book is written as a conversation between Augustine and God, and between Augustine and himself. So there we have the clue. Conversion is getting yourself in line with who you are intended to become by the God within, and everything other than that is a kind of heresy or infidelity. "God" is the source of speech, thought, feeling, everything in the soul that is good, and what Augustine must do is to make that source the ruling principle of his life. If you take that perspective, then the *Confessions* beco-

mes less limited in its appeal, almost pagan again.

Mr. Moore: What you have just described is a very different book than what I understood it to be...

Mr. Petrich: Maybe you were too fixed on his bishop's robes. Concentrate on the soul. That's where the dynamite is.

Mr. Moore: **You just started reading Saint Thomas Aquinas's *Summa Theologica* in the GI seminar – what did you ask as an opening question?**

Mr. Petrich: I asked what Thomas asks: "Why do we need sacred doctrine? Why isn't philosophy enough?" That's a very genuine question for me, fundamental for my life. For Thomas, it has an answer, or actually several answers, not all equally important. You have to ask yourself, "Do I need God to know and achieve the proper end of a human life? Does Scripture carry sacred authority for me, or not?" People answer these questions even if they never pose them explicitly. They live the answers one way or another. It's thrilling that St. Thomas is so upfront about the matter right at the start.

Mr. Moore: **Albert Camus, in *The Myth of Sisyphus*, claims that when man comes up against "the absurd" he has only three choices: suicide, religion, or embracing the absurd with gusto and doing one's best despite the futility of everything. He then claims, or so I understand, that the first two are not good options at all and the truly strong individual will choose the third option. What do you think of this?**

Mr. Petrich: I think you have to face the choices knowingly; otherwise, your milieu and the people around you will decide for you, and you'll just be going along with them. I think the religious choice is a serious one; it's not just a way of avoiding some terrible or absurd truth that you're too weak to face. After all, St. Thomas says that he can prove that God exists – demonstrably – and that's a mighty interesting claim. And those proofs (five of them) come pretty quickly – it's the second question in the book. The first question is, "Do we need him?" and the answer is "Yes." The second question is, "Does he exist?" and the answer is "Yes" again. Well that's good news, since we need him [laughs]. We also read Question 12, which asks, "Can we know Him?" and the answer is, "Up to a point." So Thomas is a wonderful introduction to the big questions that any human being faces who thinks at all about begin-

nings, endings, and everything in-between.

Mr. Moore: You have taught a lot in the Graduate Institute. **What is your impression of the graduate students compared to the undergraduates?**

Mr. Petrich: I love teaching in the GI. I love teaching in the College too, but for somewhat different reasons. The GI students are obviously older, and there's much more diversity of age and experience, and they're more – in a good sense of the word – settled. They're not bouncing off the walls trying to discover "Who am I now?" or "Who do I want to be with tonight?" or "What are people thinking of me now that I said that?" or "What am I going to do with my life when I'm out of here?" There's some of that in the younger GI's, but for the most part they are more settled and secure in certain ways.

Mr. Moore: **Can that "settled nature" backfire in any way? Do you find some of the GI students so settled that they aren't open to new ideas?**

Mr. Petrich: Yes, that's the negative side of it. There are older students who already have the answers to certain big questions, and it would be more exciting if those questions were still live ones, such as, "Should I make my living this way or that way? Take up residence in America or another country? Stay single or marry?" I guess the thing I like about the older students is that they don't have to go out of their ways to be free, or to experiment excessively with their own well-being. You know, during four years of my graduate studies, I was an RA for freshman males at the University of Chicago. Before that, as an undergraduate, I was a member of a fraternity, a practitioner in the brotherhood of good times. So I am something of an expert witness to undergraduate debaucheries, and I'm happy not to see all that stuff happening in the GI.

Mr. Moore: **Is greater age an advantage to participating in the Program?**

Mr. Petrich: It is an advantage in this sense: the more you know the world through experience, the more likely you have had your heart broken by it, and the more you will want to explore other worlds. The question asked by age is not so much, "What's this education going to get for me in the world?" but rather, "What is it about the world that makes tragedy befall the go-getters?" I am still impressed by the fact that it was Augustine's painful experiences as a

young man that made him ready to take up the book, read, and hear an answer at the age of thirty-one. Young people tend to think they can postpone answers while they get better at playing the game. They're filled with hope and energy and enthusiasm; they can make mistakes and recover...

Mr. Moore: Which is good for them. I mean, if young people knew what old people have learned through experience, this might prevent them from attempting to change things that need changing.

Mr. Petrich: Yes. And that's their advantage as young. Their danger is a lack of seriousness by not being haunted by their own tragic potentials, which are always there, even in America, though many of our great authors have sought to deny them. Everyone gets whacked by life repeatedly, and it would be good to learn while young where to go for good counsel when the time of whacking comes.

Mr. Moore: Okay, you say that the *Confessions*, at this moment, is your favorite Program book, but **I know that you are a big fan of Shakespeare. Where does he fall in all of this?**

Mr. Petrich: As I said, Augustine's on my mind now because I am reading him for seminar and his way of putting things resonates within me. I'm also working on Shakespeare's history plays and the question of Falstaff and resurrection. In *Henry IV, Part I*, Falstaff resurrects very dramatically. Falstaff is not a good man or subject of the realm. So I am wondering: how can someone who falsely stands in the image of God resurrect himself? Why does Shakespeare make us applaud it? From the beginning to the end of his career, Shakespeare was concerned with this question, but Falstaff's case, I think, is the most interesting, with the possible exception of Hermione in *The Winter's Tale*. It was very useful to have Augustine to play off of Shakespeare while considering this question.

Mr. Moore: **Why do you think Shakespeare does this with Falstaff?**

Mr. Petrich: I think Falstaff makes us aware of our desire for ultimate satisfaction. He's an old man who owes God a death, but is not about to pay it. He borrows and steals – anything rather than work. He lives in a tavern to satisfy his appetites for witty

conversation and gustatory pleasures. It's a kind of prelapsarian Garden life: no work, no death, and eating the fruit that falls into your lap from fellowship with life. That's the way of life that was intended, Biblically speaking, and Falstaff is the carrier of a deep, unforgotten longing. Augustine is also a thief, rich in appetites, masterful with words, and looking for ultimate fulfillment. So whatever I'm working on privately gets illuminated by what I'm working on in class. It's extraordinary that this should happen so frequently, and one of the chief joys of teaching at this college.

Mr. Moore: You are about to depart for a well-deserved sabbatical, which means you will not be here at the end of the coming academic year. **Is there any advice you would like to give to departing students that might help them keep the St. John's spirit alive as they venture into (or back into) the "real" world?**

Mr. Petrich: Two things make for happiness: love and work. Get them both right, and you are among God's elect. Beware of choosing either based on what the world desires, or what you measure as your desert. Find friends out there in the world, and work on something together – a good book, music, art, or athletics – that takes you out of yourselves and higher.

Mr. Moore: **Is there one book from the Program that you would suggest a graduating student revisit someday to better cope with the changes that life brings?**

Mr. Petrich: Revisit, but only after you've read all the plays and digested them with experience, *The Tempest* of Shakespeare, his final work. He wrote it to cope with all the past visions of comedy and tragedy, and all the changes ahead that will come under these visions. Learn, with Prospero, to give comic welcome to the accumulation of learned disappointment in time. Let the young have their new day, and treasure the old. Be generous in applause even at the spectacle of fault ever present in our trying hard to please.

Mr. Moore: Thank you for taking the time to share these thoughts with us.

Reflections in Writing

Advice from the SCI Seminar Mathematics Laboratory

"The unexamined life is not worth living." - Socrates

Advice from the Student Committee for Instruction

Compiled by Ripley Stroud (A17)

- Try to understand the program authors on their own level before you start disagreeing/agreeing with them. It is easy to read the great books with a modern mindset (which often means disagreement), but this can often impede understanding what the authors are actually saying.
- I felt uneasy about my role in all of my classes during the beginning of freshman year on top of the usual uneasiness of being in a new place and not knowing anyone. I was not sure how I should approach each class, or if I was constructively participating. I wanted to know where I could improve. If you feel similarly, I recommend taking your tutors out to lunch to talk about how you can improve as a student. This is also a great way to get to know your tutors outside of class. I started to feel more comfortable being at St. John's after taking my tutors out to lunch.
- Conversations outside of class will inevitably be more fruitful than conversations in class. This does not mean class is going poorly, just that you are doing well.
- Be generous with yourself and treat one another kindly. If your previous experience in school has you convinced that aspects of the Program are old hat to you (if you've taken an ancient language, if you've been in discussion based classes), then on the off chance that you're right, it is your duty to help your peers. You will note that I say "help" and not "lead" or "educate" - such things are, currently, above your pay grade. For now, listen to and interpret your peers kindly. I'm sure you expect the same from them.
- Learning Ancient Greek was the most difficult academic aspect of my freshman year. It was an unhappy mess in the beginning. On top of all the other academic requirements, I felt that I could not remember enough of the vocabulary and verb endings, let alone read the sentences out loud without embarrassing myself in class. Like all my other struggles in life, my difficulties in learning Ancient Greek made me existentially uncomfortable. I did not want to fall behind to the point of no return. What I recommend to freshman who are struggling to learn Ancient Greek is to go to Greek Assistance. Assistants are very helpful, and they dramatically improved my comprehension of the language. I spend a lot of time studying the language on my own, and I used to go to Greek Assistance twice a week (sometimes three times a week if I was feeling edgy). At the end of the year, my language tutor told me that at first she was worried that I could not learn the language, but that I have now become a strong student who always offers good translations.
- Try to help your seminar achieve balance. If you speak a lot, try to leave quiet people room to speak, and if you are quiet, try to speak more often. Everyone has something they can contribute to seminar to make it the best it can be.

A Brief Examination of the Soul in the Myth of Er

Matteo Burrell (A19)

When describing the afterlife through the Myth of Er, Socrates states that the new lives are taken from the lap of Lachesis, the daughter of fate connected to the past (617c).¹ This appears to imply that no life can be chosen that has not existed prior to the act of choosing. Essentially, the soul cannot follow a path that has not been paved before. Socrates states that the choice between a life that will lead toward justice or injustice is “the most important choice [for the soul] in life and in death.” Additionally, “for the most part the choice was made according to the habituation of their former life” (620a). If the soul can only choose lives from the past and can only make the decision based on past lives, how can the soul come to know or be anything other than what it is?

When discussing how the soul goes about choosing a new life, Socrates says, “it was a sight worth seeing: how each of the several souls chose a life. For it was pitiable, laughable, and wonderful to see. For the most part the choice was made according to the habituation of their former life” (620a). This seems to imply the presence of a kind of cosmic gravity: the life that one leads is dependent on the life one has led. If the cycle of life and death is continuous as indicated in 617e, then the soul will become progressively more just or unjust. If this were the case, one would not be capable of choosing the philosophic life; rather, philosophers would always be as they are. If this stood to be true, there would be no use in practicing philosophy/the study of knowledge, since one would be incapable of changing the life that the soul takes. When Socrates states that this is “the most important choice [for the soul] in life and death” (619a), is the reader to understand this to truly be a choice?

According to Socrates, “[this] is the whole risk for a human being, as it seems. And on this account each of us must, to the neglect of other studies, above all see to it that he is a seeker and student of that study by which he might be able to learn and find out who will give him the capacity and knowledge to distinguish the good and the bad life” (618c).

¹ Plato, *Republic*. Trans. Allan Bloom. New York: Basic Books, 1991.

Here Socrates indicates that it is possible, through study, to distinguish what is good from what is bad, and that it should be the goal of the human being to attain this form of insight. Since this statement indicates that human beings should partake in this study, it stands to reason that human beings, regardless of the lives they occupy, have this capacity for this study. If one were to assume the opposite, then Socrates would be suggesting that attempting to comprehend the incomprehensible is worthwhile. When it is assumed by those exploring a given subject that they cannot explore it, study and exploration cannot continue. In order for the inquiry to continue, and for it to be examined in what way one might come to exercise control over a predisposed end, let it be assumed that Socrates is correct. If Socrates is correct in indicating that the human being is capable of gaining this form of awareness, the choice that the soul has to make in the afterlife does not appear to be definitely predetermined by what it existed as in a past life. In other words, it appears that one can influence the trajectory of the soul through study. If this is true, how does the human being take up this study?

In order for human beings to take up a study of the just, they must have some conception of justice. In other words, they must in some way be made aware of that which they endeavor to learn. One may think that living justly allows for an understanding of justice. This appears to follow; however, Socrates introduces an example to the contrary. “The man who had drawn the first lot came forward and immediately chose the greatest tyranny, and, due to folly and gluttony, chose without having considered everything adequately... He was one of those who had come from heaven, having lived in an orderly regime in his former life, participating in virtue by habit, without philosophy” (619b). This example indicates that living virtuously by habit, without understanding, does not lead to the ability to discern what is just. This passage seems to point towards a distinction between living and knowing. Socrates also distinguishes between life and the soul (621c). If a chosen life and the soul constitute a human being, it seems that, should an understanding of justice

exist in the human being, an understanding of justice must be present in either the life or the soul. The aforementioned quotation precludes an understanding of justice coming from the life alone; simply living according to something does not necessitate an understanding of said thing. Therefore, the understanding of justice, should it exist, must be present in the soul. It appears from this example that the soul of the human being is the part that knows.

Socrates states that “the soul is immortal and capable of bearing all evils and all goods” (621a). Additionally, “an ordering of the soul was not in [the lives], due to the necessity that a soul become different according to the life it chooses” (618b). From this it is understood that the soul exists outside of the life it takes on. If it is the soul and not the life that holds knowledge for the human being, and the soul can bear all things good and evil, it stands to reason that these things are in some way accessible to the human being.

It is stated that the lives the soul may take come from the lap of Lachesis and that Lachesis is associated with the past (617c). From this the inference may be drawn that the lives are taken from the past. Further, it is stated that “there were all sorts; lives of all animals, and, in particular, all the varieties of human lives” (618a). Around 617d, the process of choosing a life is referred to as “the beginning of another death bringing cycle”. If the soul is immortal, all the patterns of human life are taken from the past and the process of choosing a life is cyclical, then it may be reasonable to assume that the soul has lived all human lives. As a result of this, the soul would bear all the things that it previously experienced and these would be accessible to the human being. If one is to assume that the ability of the human being to understand rests in the soul and that the human being has the capacity to contemplate all things, it appears that this statement must be held true.

Based on these conclusions, it could be that the process of attaining knowledge begins at the end: knowledge latent in the soul can be brought forth to inform decisions made in the present. It is perhaps this action that is the end of what Socrates refers to as learning the difference between a good and bad life. It stands to reason that while those who are virtuous by habit may in some ways share in the virtues latent in the soul, their activities are not sufficient to bring about a complete understanding. This is evi-

denced by the fact that once asked to evaluate the merits of another life, instead of making habitual decisions within familiar circumstances, the supposedly virtuous man reveals himself ignorant.

As was stated earlier, in order to proceed with an inquiry about a given thing, the inquirer must believe that the object is reachable. If the inquirer does not accept this to be the case, then the inquiry serves no purpose. It is perhaps for this reason that knowing must be placed in the soul. The object of thought becomes reachable because some part of the human being – the soul – has already experienced it. Thus, it is not fruitless to inquire, since knowledge is accessible.

It has been said that the understanding of justice and a “knowing” of all things are present within the soul. Additionally, the human being has the ability to access this capacity through study. Since the soul knows justice, regardless of the life one lives, a human being has the capacity to recognize the study of justice. In studying justice, the human being may gain access to the knowledge present in the soul. In turn, through this process the human being may gain the ability to discern between the just and unjust life. Elements of the initial question have been answered. If no knowledge is truly apart from the soul, then the soul need not understand anything apart from itself. Similarly, since human beings, regardless of the lives they lead, have the potential to access the capacity of the soul, and the life and the soul are inseparable so long as the body lives, they also do not need to understand anything apart from themselves.

It remains to clarify in what way and through what study one is made aware of the knowledge latent in the soul. Additionally, although believing that all is latent in the soul provides some framework for understanding how one might overcome the limits introduced by living a certain life, this does not explain how these limits were overcome initially. In other words, the preceding suggestion appears to solve the problem by assuming that it was once solved. Finally, even if one were to claim that all knowledge is present in the soul, it remains for one to account for the discrepancy between what people know. How do those with the same potential come to realize that potential to differing degrees? If one cannot account for this – if it proves random – the element that choice plays in controlling these matters must again be questioned.

The Continuity of Existence for a Thinking Thing

Sean Hutzell (AGI17)

Humans are contrary to perfection because will exceeds knowledge, as Descartes addresses in his own meditations on existence. He casts into doubt everything, building his first philosophy on the premise of a real, ethereal truth found within himself: man. Using the proved assumption of the existence and essence of a divine God to allow human reason to define man, Descartes becomes a thinking thing: "A thing that doubts, understands, affirms, denies, wills, refuses, and that also imagines and senses" (Meditation II, 28).¹ Descartes secures the foundation for knowledge of *human being*. That humans are thinking things is true, with absolute certainty, for that is known, but within man lies imperfection.

Humans are unlike the God that Descartes finds to be supremely good and perfect, because whereas man's will and curiosity exceeds his knowledge created out of senses and imagination, God's knowledge is infinite and his will is creation. Given that "the nature of God is immense, incomprehensible, and infinite, this is sufficient for [humans] also to know that [God] can make innumerable things whose causes escape [them]" (IV, 55). Further, Descartes asserts that humans should view "not simply some one creature in isolation from the rest, but the universe as a whole", a cosmos when put together (IV, 55).

Human will relates to the surrounding corporeal world. When conscious and awake, humans are deliberate with their curiosity and will, as they not only exist, but interact with the material world (seemingly) around them. As a thinking thing, humans are constantly at work, or would be if they simply were knowledge; but as previously stated, will and knowledge do not coincide to create harmony.

And man must rest: the extended definition of man (the man that not only is a thinking thing, but also considers the body and mind – the perception and sensory – as an extension of himself) needs sleep as part of actuality. Whether it is the body, mind, or thinking thing itself, man needs sleep as part of his life experience.

¹ Descartes, René. *Discourse on Method and Meditations on First Philosophy*. Fourth ed. Trans. Donald A. Cross. Indianapolis: Hackett, 1998.

Sleep is a necessity, but perhaps not a necessity for the essence of man: that of a thinking thing. "I am" becomes experiential. Breaking down the construct of man, Descartes makes the essence of man's existence "a mind, or intellect, or understanding, or reason..." (II, 27). This definition, however, does not directly illustrate when man is truly awake, just that he is, that he exists. Rather than just a thinking thing, perhaps man is a thinking thing with potential – potential for knowledge, potential to dream, to learn as will is exerted over the exterior world, and even the human body in which thinking occurs. And regardless of whether dreaming, sleeping, or wakeful, man's "nature is also such that [he] cannot focus [his] mental gaze always on the same thing, so as to perceive it clearly" (V, 69).

During sleep there is the possibility of a kind of awareness in dreaming, but in sleep it still seems to be temporarily removed from conscious, rational thought. As when awake, will exceeds knowledge in sleep, in part because knowledge does not have a rational foothold on imagination, especially in dreams. It is the source of error. As Descartes notes:

since the will extends further than the intellect, I do not contain the will within the same boundaries; rather, I also extend it to things I do not understand. (IV, 58)

Descartes' "will" is what maintains compatibility with God. Having found belief in an almighty, benevolent God, though God's will is greater in knowledge and power (elements of degrees, as opposed to a direct separation of kinds of wills), viewed as just will itself, "God's faculty of willing does not appear to be any greater" (IV, 57). God's manipulation of will has more effect and consequence, because he maintains the perfect knowledge that man lacks. So regardless of being awake or asleep, the same fallacy of understanding remains true. What must be presented more clearly, however, is whether or not the thinking thing ceases to exist altogether in dreamless sleep.

In sleep, humans can create an exterior world

within their sleeping mind through imagination. Just like in sleep, while awake, the will of man exceeds the knowledge of man, for it extends to things man does not understand. Descartes notices the degrees of variation in sleep and being awake:

This head which I am shaking is not heavy with sleep. I extend this hand consciously and deliberately, and I feel it. Such things would not be so distinct for someone who is asleep. As if I did not recall having been deceived on other occasions even by similar thoughts in my dreams! As I consider these matters more carefully, I see so plainly that there are no definite signs by which to distinguish being awake from being asleep. (I, 19)

Early in his meditations, this variation, instead of distinct separation, indicates Descartes' possible, simple belief that man lacks knowledge. His will and imagination maintain the lead in superseding what is comprehensible. And while Descartes does find actual distinction between sleep and wakefulness through his conclusion from the meditations that "dreams are never joined by the memory with all other actions of life, as is the case with those actions that occur when one is awake" (VI, 89). This is a distinction in the aforementioned memory and also perception – a knowledge of where, what, and when something comes – but not enough to ascertain the conviction that in wakefulness knowledge matches will. It simply assures more security of reason. Thus, while there is a distinction in the two states of the body, it does not indicate the end of the thinking thing during sleep, but rather an irrational compensation of the will/imagination via lack of stimulation. "To anyone paying very close attention to what imagination is, it appears to be simply a certain application of the knowing faculty of a body intimately present to it, and which therefore exists" (VI, 72). The imagination itself is part of the knowing faculty, which in turn is simply a capability of the thinking thing. If that is the case, then during dreams, the thinking thing does not cease to exist, at least not from its own internal workings as a thinking thing; where, then, does the consciousness go? None of this is to deem

what is imagined as true, but simply to say that the "power of imagining really does exist" and constitutes part of the thinking thing's conscious thought.

It would seem evident that the dualism – co-existence – of the soul and body maintains a cohesion through an interventionist system. The body's needs must be met for survival, allowing the conduit through which the soul acts (thinks) to continue its own existence in the material world, so that its continued being is maintained.

If a thinking thing is distinct from the body, "insofar as it is merely an extended thing and not a thinking thing, it is certain that [a thinking thing] is distinct from [the] body, and can exist without it" (VI, 78). That perhaps would suggest that it is the extension that requires sleep, not the thinking thing itself. And yet that does not seem to determine why some thinking things dream, others do not, and even why there is a variability between both dreaming and not dreaming within an individual during numerous episodes of sleep. When there are no dreams, does that in effect function as a temporary end to the existence of a thinking thing? No thought is present or active. "I am; I exist – this is certain. But for how long? For as long as I am thinking for perhaps it could also come to pass that if I were to cease all thinking I would then utterly cease to exist" (II, 27). Perhaps man should therefore be defined as a thinking thing with potential, as it has been previously, given that upon waking thought and existence resumes.

This can be substantiated with Descartes' claim that "all these perfections that I am attributing to God are somehow in me potentially, although they do not yet assert themselves and are not yet actualized." (III, 46) The perfections that God has given man, the thinking thing, lies not yet in his actuality but in his potential. If that is deemed correct, then perhaps the potential continues on into sleep, dreamless or otherwise.

Given Descartes' assumption of God being good, not a deceiver of man (which allows for human reason and calculation, because benevolence is and must have been where Descartes' placed his faith, offering the foundation for his first principles, thereby grounding his understanding), it would seem safe to posit that God would not stop and start elements of his creation (a thinking thing) in such a manner as to make it thoroughly inconsistent and varied. It is an explanation similar to the one for why Descartes

believes in human reason: without it, existence can never be justified, let alone reasoned. If a thinking thing's existence was so full of discrepancies and contradictions, logical reasoning would point to the Deceiver, who Descartes had already ruled to be inconceivable. And even if deception *does* occur, it is in man's own inability to understand, not in God's intervention. The thinking thing is really conscious in the deepest sleep, dreams or no, on account of the preservation of God – on account of being part of the infinite and his creation. It remains man's own will that "turns away from the true and the good" (IV, 58).

And so there is a return to the dualism of the soul (thinking thing) and body, insofar as they interact. If the body is simply an extended conduit, an example of its interaction with the soul would be found in pain: the body suffers the pain, causing a reaction, notifying the soul of the essence of pain incurred upon the host, inciting a reaction from the thinking thing itself. Naturally, the thinking thing alters its actions and thoughts to avoid the pain in the future. To ensure that the body is simply an extension of the thinking thing another experiment may be implemented via a body swap. If the conscious of a man is transferred into another human, and then both the original body and the new conscious body are threatened with torture, the man would rationally pick to have the body tortured, rather than the conscious, because the conscious is truly the thinking thing that he

is and so will be concerned for its wellbeing, rather than the extension (the body).

This reaction and methodology for the separation and coexistence of thinking thing in body is important for the implications of the existence of the thinking thing in sleep and also after death. It stands likely that the body influences the thinking thing because of the material world it is a part of, enough that a series of events, or reactions, occur which let the thinking thing become aware of pleasures or pains.

But on the assumption that existence is continued through even the deepest sleeps, the body only notifies the thinking thing of material change (that the body needs sleep, or the body is in pain). It could thereby be posited that if existence continues through sleep, because the material change does not condemn the immaterial, it may follow that in death a similar experience happens.

While inconclusive, using Descartes' reasoning and belief in an infinite, non-deceiving God whose will is the same in kind as man's, and whose knowledge is granted by recognition of what is True, perhaps Descartes would further reason that there is a return to God in some manner. In the form of knowledge returning to the creator, or the essence of will unifying creation with maker, the immaterial thinking thing, at its essence, has been made by a God for the preservation of its own existence in the material world – possibly with the acuity and strength to understand truly what a thinking thing is.

On *Symposium*: On the τέλος of Love

Ivan Syritsyn (A19)

The *Symposium* is the work of Plato people think of most often when someone asks after the nature of love. In the dialogue, Apollodorus tells the tale of a banquet where, to celebrate the prize-winning performance of a play, Socrates and his compatriots decide to give eulogies in praise of Love (Ἔρως), a god they consider oft-neglected. After a series of speeches describing Love as one of the most venerable deities, describing different sorts of Love, the origin of Love, and the nature of Love, Socrates' turn to speak to the assembly arrives. However, before Socrates acquiesces, he examines the speech just given by Agathon. This examination is partially in preparation for his speech and naturally flows into his ode to Diotima. Let us now turn to Socrates' discourse with Agathon.

Between 199c and 201c, Socrates, after his usual praise of the speaker, probes Agathon to give further clarification of the nature of Love. To begin with, Socrates has Agathon declare that Love has an object in his attention and that the object is desired; then he puts forth the question of whether or not one has the object they desire. The answer to this question is that one cannot have the object that one desires, for one only presently desires what one does not have. Agathon says as much, but fails to make the observation that something might not only be desired by someone lacking that thing presently, but also that the thing might be desired by the very same person in the future after it has already come into that person's possession. This is emphasized by Socrates, who uses it to bring forth the point that the lack of security concerning whatever is desired shows that the person who desires it does not truly own what he is desiring. Instead, he treats it as if it is constantly about to slip from his grasp, even if he has taken possession of it beforehand. Why does Socrates belabor this point? It is to reveal the true relationship between Love and what he desires.

As inherent to its nature, Love has its focus directed towards an object and desires that object. So far, Socrates has reasoned out with Agathon that whatever is desired is lacking from whoever desires it. The question that is to be asked now is: what exactly does Love desire and thus lack? By saying that

the gods contrived the world from a love of beauty, Socrates could fish out of Agathon that Love has a desire for what is beautiful and thus lacks what is beautiful in all ways – including all that is good, since what is good is beautiful. In consequence of this, Agathon is left totally befuddled by the nature of what he only a little while ago claimed to know. Presumably satisfied with this, Socrates goes on to make his speech. However, before we can look at that, we must take a look at the root of the argument which has set us up for Socrates' speech, namely that *what one wants to keep one does not have*.

When first looking at this argument, I was surprised at what I now consider to be a surface contradiction. Here we have Socrates saying that one may have something in one's possession presently and yet not have it if one desires to keep it in the future. How can it be claimed that someone does not have something if once they acquire it they never lose it? At this point, I realized that the only way for Socrates' statement to hold true was to differentiate between something acquired and something inherently intertwined with someone and thus possessed from the beginning. Earlier in the *Symposium*, during Aristophanes' speech, we are presented with the image of a primordial human called ἀνδρόγυνον, a *man-woman*, where the two sexes were combined and thus two bodies were fully intertwined. Because this species planned to assault Heaven and go to war with the gods, Zeus decided to cleave them in two. After this deed was done, the separated halves would seek each other out and cling to each other, dying from hunger due to their indolent refusal to do anything while apart. Such was the greatness of their desire for one another. This illustration serves the purpose of pointing out the difference between something which is inherently yours being a part of you and it being something you cling to as if you *wanted* it to be part of yourself. When the ἀνδρόγυνον was in its original state, it felt no desire for each of its halves, for it could not conceive of its halves being separated – it was one whole, one flesh. It is only after the separation that the two halves of the ἀνδρόγυνον desired each other, for they were no longer united. They were not *one*, but *them*. No longer were they

inherently the same, having each other in the original sense, and thus they desired to have each other in the secondary sense, knowing that they could lose each other in being separated. This distinction made between having as inherent to oneself and having as separate entities is what I believe Socrates means to emphasize. When Socrates came to the conclusion with Agathon that Love did not inherently possess beauty and goodness and thus had a desire for them, he foreshadowed the role and end goal of Love, as he stated in his speech concerning Diotima.

As Socrates begins his speech, he reveals that his take on love comes from a priestess that he had met in his youth named Diotima of Mantinea. Using the same method Socrates employed with Agathon, Diotima showed Socrates that the way he was describing Love led to the conclusion that Love inherently did not possess beauty and goodness. After Socrates questioned whether that meant that Love was ugly and bad, Diotima asked him if not being one thing inherently meant being its opposite. By this reasoning she was able to convince Socrates that there are more than just the two ends on a ruler – there are also the increments which lie in between. What did this mean for the nature of Love? By saying that Love was neither mortal nor immortal, Diotima gave Love the characterization of a great spirit, a medium of sorts. This characterization of what Love is gives us its τέλος: its completion and consummation.

Towards the end of 202e, Diotima begins her description of exactly what she means by calling Love a great spirit using another mythical story. At a banquet celebrating Aphrodite's birth, Need (Πενία), desiring a child, laid down with Counsel (Μήτιδος), who had passed out from drinking the nectar of the gods, and thus she bore Love, who became an attendant to Aphrodite. This circumstance of birth is detailed by Diotima to extol the unique qualities of Love. From his mother, Love acquired a constant want of things, while from his father he acquired the attraction to what is beautiful and good, such as his mistress Aphrodite. Thus, Love flourishes in one moment and is dying in the next, reviving through his father's nature yet losing what he does have due

to his mother's. This was why Love was an intermediary and neither possessed things fully divine nor those fully mortal.

Socrates, now knowing the nature of Love, asks Diotima a very obvious question: what use is this Love to mankind? Diotima, always pushing people to search for the answer, asked Socrates to state the object of Love's desire. He states these objects to be that which is beautiful and that which is good. As a result Socrates is brought to the conclusion that with Love, there is the desire and pull towards what is good and what is beautiful. However, this is not enough for Diotima, who prods him with the question of what the method – the actual effort – of love is. Thus, right before 206c, where Socrates proclaims his ignorance, we get the most succinct definition of the τέλος of Love. It is the begetting of a beautiful thing of both the body and the soul. Although Diotima expands on the meaning of this single phrase, it is precisely this phrase which sums up the entire goal of Love.

Even though in the *Symposium* more is said concerning Love after Diotima's speech, it is possible to conclude the *Symposium* well with stating the τέλος. The true object of desire is towards what is good and what is beautiful. That desire is present in all the pursuits of Love, including the Popular Love and not just the Heavenly Love as in Eryximachus' speech. The desire may be turned into things which will not ultimately satisfy it, but the fact that it can be left unsatisfied points to there being a true method for satisfaction. Leaving the exploration of what is good and what is beautiful to other works, here we have the bridge between us and these immortals that we are trying to grasp. Without this desire, without Love, we would have no guide and be left merely among mortal things, content with whatever the Fates may decree and satisfied with what we consider to be the best of what we could possibly have. Would we be fine with this lot? At that point, I think we would not even notice. At least I know my wish. May we always strive for what is divine. May we always make room for Love.

Reflections in Writing-Mathematics

“Which is Impossible”: Proofs and Boundaries in Euclid's *Elements*

Cordelia Achen (A19)

The reductio ad absurdum proof method appears quickly in our foray into Euclid's *Elements*. It is quite an innocuous method, consisting of proving that various undesirable possibilities lead to impossibilities and thus, by the law of non-contradiction, the possibility you wished to prove must be true. These proofs are also infrequent, occurring only a few times in Books One and Two. However, in Book Three, the reductio ad absurdum becomes the *modus operandi* for Euclid. In the thirty-seven propositions of Book Three, eighteen (48.6%)¹ of the propositions are proven using the reductio ad absurdum method. What accounts for this increase in the use of reductios? It would appear to be one further mystery to add to the enigmatic circle, tossed aside without further care. However, it ties in with another enigma, found in Proposition I.6: “If in a triangle two angles be equal to one another, the sides which subtend the equal angles will also be equal to one another” (6-7)². This proposition appears unimportant on the surface. It is a simple converse of I.5³, in which we prove that in isosceles triangles the angles at the base are equal. However, I.6 is the first instance of the reductio ad absurdum method and is never mentioned again in the entirety of the *Elements*. What is this proposition intended to show? Why at this point in the book? Why is a reductio even necessary? What these perplexities appear to illustrate is that reductio ad absurdum proofs appear when we approach fundamental boundaries of mathematics which we cannot wholly define and grasp.

Before we explore this thesis within the context of Book Three and I.6, it may be helpful to explore the postulates given at the beginning of Book One, especially Postulate Five. Postulate Five states: “That, if a straight line falling on two straight lines make the interior angles on the same side less than two right angles, the two straight lines, if produced indefinitely, meet on that side on which are the angles less than the two right angles.” (2) This infa-

mous postulate is quite different from its fellows, “All right angles are equal” or “To describe a circle of any shape and size” (2). It lends itself to a reductio interpretation; we are assuming the existence of converging lines so we can assume the existence of parallel ones. The cause of this roundabout method can be seen in the definition of parallel lines: “Parallel straight lines are straight lines which, being in the same plane and being produced indefinitely in both directions, do not meet one another in either direction” (2)⁴. The definition of parallel lines contains the idea of infinity, a concept in some ways beyond man's mind. We grasp the concept of infinity, in a very rational way, as something that continues without end; just like two lines must be able to continue indefinitely, without end, never converging once, in order to be parallel. However, we are unable to see infinity in the same way we can see something like a triangle (that is, in its entirety). Since we are quite unable to experience infinity (thus losing some ability to comprehend it), it would seem to mark a sort of practical boundary in mathematics: it is something we can use and loosely define, which allows us to apply it to various ideas, but not something we can visualize completely. Unable to truly visualize infinity and grasp it fully, we must rely on the negations we can understand; thus, we use negation as a sort of checking system, bouncing off impossible boundaries to discover the boundaries that lie within the possible.

This would seem to be the case in Book Three of *Elements*. Circles have always had a pseudo-mythical role in Euclid's mathematics. We simply assume their existence, using them as a standard of equality for other shapes. In Book One we defined circles through straight lines, the one shape we seem to understand⁵ without trouble. This method means we begin proving propositions without knowing anything about the curvature that in some ways is the

¹ Reductio Propositions: III.1, 2, 4, 5, 6, 7, 8, 10, 11, 12, 13, 16, 17, 18, 19, 23, 24, 27

² Euclid, *Elements*. Trans. Thomas Heath. Ed. Dana Densmore Santa Fe: Green Lion Press, 2013.

³ Mostly. It is lacking the additional proof that arises when we extend the lines of the triangle.

⁴ All italics come from the translation, unless otherwise stated
⁵ Lines are an interesting shape to consider in terms of the main thesis: it would appear that they are the most knowable of the shapes available to man, as there are no reductios required for their demonstration (amply demonstrated in Book Five). Also of interest is that curved lines are never defined, either; they are only understood as not being straight.

essence of a circle. In Book Three, we attempt to rectify this ignorance. We cannot, however, as we still lack the fundamental prerequisite for understanding circles: a rudimentary understanding of curve. This creates a prime breeding ground for reductios. We have no positive knowledge about circles, and thus our only recourse is to show any opposition impossible. Intuitively we know we must be correct, because intuitively (even if not systematically) we understand circles, but by the standards of pure reason we must rely on absurdity to prove it. Let us take Proposition 2 as an example: "If on the circumference of a circle two points be taken at random the straight line joining the points will fall within the circle" (52). To prove this, we assume the straight line will fall outside the circle. Constructing a triangle, we show that the line that connects a point on the line outside the circle is less than a radius. Then we show that this would prove the radius that connects to the outer point would be greater than the line as a whole, and thus the part would be greater than the whole. This is a flagrant violation of Common Notion Five, and thus we have proven our point. Our inability to positively prove this arises through the previously mentioned ignorance concerning curves. We would have to adequately describe the way the arc of a curve between two points bends outwards to positively illustrate why a line between them must remain inside that arc. This is unavailable to us at this stage. Proposition 10 is similar. Here we prove that "a circle does not cut a circle at more points than two." (58). The absurdity is demonstrated when the circles in question are shown to have the same center and cut one another. This is obviously impossible; they would either be identical circles or form a bullseye, but certainly would not cut one another. As for the original enunciation, it appears obvious to us. Since a circle curves outwards and then inwards in an even pattern, if two circles cut one another we know that the arcs will curve in opposite directions then come inwards and intersect. Thus, they would only meet at two points. However, as we have seen, curves are fundamental. We must suppose them, we must use a shape defined by them, but we never understand their nature inside the *Elements*. It is this last fact that forces us to use the reductio ad absurdum method.

This brings us to Proposition I.6. What, one may wonder, is so fundamental within it that it

would require a reductio ad absurdum proof? Let us look at the enunciation once more: "If in a triangle two angles be equal to one another, the sides which subtend the equal angles will also be equal to one another." (6). This is the first time in Book One that we have attempted to describe the lines of a triangle through the angles; in Propositions 4 and 5 we define the angles through the lines. However, we are in a similar position with regard to angles as we are with regard to circles. Look at the definition of an angle: "A *plane angle* is the inclination to one another of two lines in a plane which meet one another and do not lie in a straight line." (1). The only significant elucidation on this point is when we define the right angle and state that it occurs when the lines cross in such a way that the angles formed are equal. This is analogous to the way circles are defined by the equality of the lines radiating from the center. We can only define angles in terms of lines, because those are the boundaries of an angle. In the strictest sense, an angle is really the empty space between the inclined lines. Unable to define or standardize this emptiness, we use lines to keep it contained in the same way we use a boundary to bind figures. But this action would appear to be different: an angle is not fully contained. This, presumably, is why the definition of boundary (Definition 13) occurs after the various definitions for angles (Definitions 8-12). Lines *marks the boundary* for angles, as they are responsible for the existence and limits of the angle. But they do not contain it, and thus are not mathematical boundaries. This also helps to explain the existence of Postulate Four: "All right angles are equal" (2). Since changing various factors about the lines (except for inclination, of course) has no impact on the angle, and we seem only able to explore geometry through the lens of straight lines¹; we have no access to angles, and we cannot positively prove facts about them. Thus we assume a standard (the right angle), based on equality of adjacent angles.

Proposition I.6 brings this problem to a head. Unable to cut angles like lines or really explore angles in a meaningful way outside the lines they contain, we are forced into a reductio. We contain the angles in lines and show that if the sides are not equal, the triangles that result are both equal and unequal: an absurdity. Like the other reductios we have

explored, we reached the boundary, the point of axi-
¹ Compare the problems that arose when we explored circles as well as note 3 above.

-om, and were forced to bounce off something familiar (in this case triangles and straight lines) in order to prove what we have trouble defining in the mathematical realm. Thus, it does not matter that I.6 is never used again: it has helped us bridge the problem of angles, by showing the method that will rescue us throughout the *Elements* when we approach a boundary or axiom. This is all that is needed.

As we have seen, reductios play a fascinating role in the *Elements*, showcasing what our boundaries cannot fully illuminate. We see this in the approach to postulating converging lines, created by the implicit infinity found in the definition for parallel lines. Unable to adequately create a boundary for parallel lines, we postulate its opposite. Similar things arise in Book Three, when we try to build our knowledge of the near-deified circle, defined by curve and equality: two things we cannot define nor, it seems, create boundaries for. Thus, we show the impossibility of a different boundary. This is reflected in the postulates, where we simply assume our ability to describe a circle of any size and shape, knowing we can never build it ourselves¹. Proposition I.6 is the same way, except caused by the emptiness characteristic of angles rather than the curve and equality of the circle. In the end, reduc-

¹ Note that in Book Three, we never construct a circle: we describe a circle based on parts of a circle.

tio ad absurdum proofs are quite helpful to understanding mathematics. Seemingly inferior to positive proofs, they show us our boundaries and make us look deeper into what creates the tension between us and mathematics. Why must we postulate that right angles are equal? Why is Postulate Five so complex? We have explored possible answers to these questions in the context of the frequency of reductios ad absurdum, but more questions remain. For instance, Book Five has no reductios, and also happens to deal exclusively with mathematical facts characteristic of lines. Why do lines enjoy this premier place in mathematics? What prevents Euclid from defining curvature? These are among the questions we must answer at some stage, and acknowledging the enigmatic role reductios ad absurdum play and the boundaries they attempt to illustrate may lead us one step closer to solving them.

Examining a Euclidean Method

Abraham Zhao (A19)

Commensurability and rationality are not defined until Book Ten, but the first demonstration of *Elements* involves creating a rectilinear figure using circles. Despite the fact that the curved and the straight are incommensurable, Euclid uses properties of the former to create the latter, but he does not decide to draw our attention to incommensurability until we have travelled a majority of the path he has mapped out. The stress that Euclid places on this topic is evident because of the structure of Book Ten, the longest of the thirteen books. It is not only the sole book with multiple definition sections, but it is also thoroughly segmented off from the rest of the work: no other enunciations in the text use the term “commensurability”, and “rational” & “irrational” only reappear in the enunciations of the last book, Book Thirteen. There are several instances of irrationality and incommensurability before we reach that point in the book, so why is it only in Book Ten that Euclid makes those distinctions and invites us to start paying attention to these things? Furthermore, what is the importance of the irrationality that exists in Book Thirteen’s proofs regarding planar and solid figures? It is only then that the incommensurability found by looking at the round and straight together (inscribed shapes rather than the rectilinear-based irrationality from Book Ten) is made explicit, regardless of how many implicit examples came in the previous books.

The response to this inquiry seems to lie in a certain type of progression that reoccurs throughout the *Elements*. Specifically, I argue that Euclid lays out progressions that take this format: start with contrary ends of a concept (such as rectilinear and circular), develop a hybrid that partakes in both ends (cylinders, semicircles), and use the resulting hybrid to develop understanding about the two ends. With regard to commensurability, the reason that it gets defined so late is because it is only at this point, after dealing with planar numbers, that we are ready to understand the concept of lines commensurable in square: the lines themselves are incommensurable to each other (and as such take part of that side of the commensurable/incommensurable contrary), but the figures made by the lines take part of the commensurable end. The other two examples of this progres-

sion that lie within *Elements* are curvilinear/rectilinear and the hybrid shapes in between (for both plane and solid figures) as well as equality/inequality, for which the hybrid term would be “similarity” which we meet with in Book Six.

I.1, 2, and 3 use the properties of the circle to make rectilinear shapes. This is why Euclid defines the circle the way he does in the first book: though the idea of “carried around to its initial point”¹ used in Book Eleven’s definitions (14, 18, 21) may be comprehensible and applicable as a way of defining a circle (by carrying a line around rather than a plane figure), a definition like this would not allow Euclid to use the circle as a construction tool for the equilateral triangle. What is worth noting is that the curvilinear/rectilinear contraries are mutually beneficial – the very first proposition of the circle book, III.1, shows that Euclid also uses the rectilinear properties of the triangle he discovered using the circle from Book One (I.8) to make constructions, and later proofs, about the circle.

This type of mutual benefit is continued when we reach Book Five, except this time the benefit resides with the equality/inequality contraries. Book Six’s concept of similarity relies on the idea of proportionality (VI. Def 1), and following that, the definition of proportionality in turn relies on the concept of same ratio. Finally, the concept of same ratio exists when “the former equimultiples alike exceed, are alike equal to, or alike fall short of, the latter equimultiples respectively taken in corresponding order” (V. Def 5). It is now evident that understanding equality is a fundamental precursor to understanding proportionality and therefore similarity (again showing that the hybrid is understood after the contraries). The other argument that needs to be made is that the hybrid term similarity partakes of both contraries. The evidence still resides in VI. Def 1, since proportionality implies potential for inequality, but similarity also depends on the equality of angles.

Continuing this chronological mapping of Euclid’s *Elements*, the number books’ main place in this argument is that they allow us to understand

¹ Euclid, *Elements*. Trans. Thomas Heath. Ed. Dana Denmore Santa Fe: Green Lion Press, 2013.

commensurability and its contrary. This is evident in the enunciation of Proposition X.5 (“Commensurable magnitudes have to one another the ratio which a number has to a number”) and its converse about incommensurability, Proposition X.7. It is worth noting that numbers seem to demonstrate that these contraries only exist with respect to magnitudes, not multitudes, in Euclid’s world. An important matter at stake in analyzing Euclid’s views on commensurability in Book Ten is how he differs from modern math. Modern mathematics considers irrational numbers ‘real numbers’, but Euclid does not leave space between prime and non-prime numbers.

The response to the original question about Book Ten can now be presented more fully. The condition that the hybrid (in this case, “commensurable in square only” (X, Def. I.2)) results only after the extremes have been discovered is met, simply because commensurability in square is defined after the simple commensurable/incommensurable contraries are. The reason why these definitions are placed so late is because it is only in Book Ten that Euclid deems it necessary to make distinctions between the types of commensurability when he begins to look for lines such as medials, binomials, minors, and apotomes. Understanding these lines is a key part of what Euclid tries to accomplish in Book Thirteen, since they appear in many of its enunciations.

Before reaching the final book, we arrive at solids, where the rectilinear once again is used to explain properties of the curvilinear. This time we can incorporate both the equality/inequality/similarity set from planar figures (e.g. XII. 1 & 2) and

the rectilinear solids (XI. 32, XII. 7) to discuss the hybrid curvilinear-and-rectilinear solids. In this way, an overlap of different contrary-based concepts allows us to discuss similar contraries in deeper dimensions, since this combination brought us from planar to solid. This type of development seems to be what appears “beautiful” in Euclid; beauty in this type of mathematics stems from a kind of birth: different concepts come together to create something simultaneously similar (insofar as it is geometrically understood) and different (insofar as it is new). As such, when concepts like Book Five’s proportionality and I.47 come together, propositions like VI.31 appear beautiful because of how the paths converge. That is to say, VI.31 would be less beautiful taken out of the context of *Elements* in the same way that using a ruler and a compass does not provide a beautiful equilateral triangle like using the definitions from Book I to piece together Proposition I.1 does.

As such, the conclusion of this paper serves to explain why my initial inquiry is still somewhat unanswered: I have trouble finding beauty in Book Thirteen. That is not to say I find Book XIII lacking beauty entirely – the figurate equalities and proportional relations that lead to facts about inscribed figures and respective extreme-and-mean ratios within them are incredibly satisfying to draw conclusions about. Where the issue lies is that I still do not see the conclusive importance of finding irrational lines in both the inscribed planar figures and, more importantly, the Platonic solids that Euclid defines and uses in Book Thirteen.

On Form

Thomas Pack (A17)

In the *Metaphysics*, Aristotle disputes Plato's theory that there are static forms in which everything material participates. For Aristotle, whatever can be qualified as having *thinghood* is comprised of matter and form. Lines of force, as Faraday demonstrates, are physical lines that do not take up any space or contain mass. These lines will push one another, will follow the path of least resistance, and can even be picked up and moved. They fit all the possible definitions of physical objects, except that they do not seem to take up space. Faraday tells us that "ponderable matter is not essential to the existence of physical lines of magnetic force".¹ Faced with the distinct possibility that non-material physical things exist, we are compelled to wonder how such forces fit in with matter and form.

Forces, such as electric currents, seem to fit perfectly with Aristotle's definition of form. They are not a part of matter, as Faraday says, but also not separable from the substance of a thing. We can see examples of this when we feel fear, and our hairs stand on end, electrically affected even though our matter is untouched. Force, like the formal cause, is nothing but movement and shape. We can demonstrate the shape of magnetic force by distributing iron filings on a piece of paper that lies on top of a magnet (Faraday, ¶3234).² We see also that the movement of the Wimshurst machine correlates directly with the strength of the spark. Faraday does not give us all the answers. We do not know if a non-charged object would be without force, but an Aristotelian would have to admit that the more Faraday discovers, the more he seems to unlock the key to the formal cause. The end of Faraday's project, therefore, would be the discovery of the inseparable form of all matter, and to comprehend the workings of the entelechy that Aristotle believes is beyond the limits of scientific reasoning.

Somehow, this new view of the world, as force and matter, is not satisfying. A true lover of Aristotle and his *Metaphysics* is interested in the

pursuit of the understanding of the substance of a thing beyond what we can see in the physical world. Faraday himself does not seem interested in fitting his findings into an Aristotelian philosophy. In fact, his terms seem to match those of Immanuel Kant, who redefined form and matter in the wake of new discoveries made regarding force by Faraday's predecessors.

So how does Kant reconcile the formal and the material with these new forces? Well, for Kant, space and time are the pure forms, and sensations are the matter attributed to them (Kant, B60).³ It seems no accident that these are some of the most interesting terms to Faraday. Induction, Faraday believes, is the fundamental principle of electrical phenomena, and he wrestles with understanding its relationship to space, time, and matter. In order to connect Faraday's consideration with Kant's idea of matter and form, let us turn our attention to induction now.

While Aristotle wanted everything, physical or metaphysical, to be expressed as causes – movements – Kant's formal sense of space and time is as "transcendental ideality": unchanging infinities. While these two theories do not necessarily contradict one another, Kant's seems to be able to go farther, and might even be another way of dealing with whatever was unsatisfactory about thinking about force in the Aristotelian sense. So, if we are wondering how forces such as electricity and magnetism fit in with Kant's ideas, we are really wondering if what we are seeing as force is merely some "empirical reality" of infinite and ideal force. In other words, we want to know if force behaves a way analogous to Kant's pure space and time. One way this could be possible is if force does not happen *in* space and time, but instead transcends the laws of those powers. Even if force does happen within these constructs, in order to say it cannot be categorized as form, we would need to show that the forces we measure are not analogous to sensible space and time, and that there is no pure force somewhere beyond the limits of complete human understanding.

Induction is the interplay between lines of fo-

³ Kant, Immanuel, and Norman Kemp Smith. . New York: St. Martin's, 1965.

-rce – how they affect one another, how they build up charge. As we begin to examine this phenomenon, we shall keep in mind our question of whether these interactions are like the interactions of moments in time, which all share a part in the infinite, formal time (Kant, A32).

Induction, Faraday tells us, is "an action of contiguous particles consisting in a species of polarity, instead of being an action of either particles or masses at sensible distances" (Faraday, ¶1165). We know that for Kant, sensible perceptions of time and space happen in infinite time and space (Kant, A38). Faraday claims that forces do as well. While others previously argued that induction happens over distances, Faraday shows that, in fact, particles affect one another within space and time, communicating induction on a scale too small and fast for us to see. More induction can occur within ice, an insulator, than in water, a conductor. The substance did not change, but somehow the formation of the particles did (Faraday, ¶1164).

Hence, Faraday's statement stands: induction must be some kind of communication between particles, being pulled to their poles like – to use Maxwell's metaphor – a rope pulls on a bell. Induction through a wire creates heat, and we saw in the experiments with Faraday cage and with the oil of turpentine that induction can even happen through the air. All these observations lead us to one of Faraday's major points: induction is something that happens within time and space, and, because it is affected only by the medium it is in, it happens through a physical relationship between particles.

We can no longer say that force is always unlimited and therefore belongs in the category of form; moreover, the finitude of the material that induction occurs through already makes us doubt whether it can in fact even be a sensible perception of some higher form of force. Electricity from a statically charged tube can move around obstacles in order to charge a conductor. The tendency of electric current to find a path of least resistance implies that there is some material in those lines of force to be resisted. If they were non-material, they would disregard obstructions and travel in straight lines. In the case of magnetism, Faraday uses a diamagnetic to magnetize light. Trying this in various media, he concludes that in this case, not even the materials have an effect – the lines of force between the magnetized object

and the light are acting upon one another (Faraday, ¶2224). Although they have no mass, there must be something to them in order for lines of force to push one another around, in order for polarized particles to affect non-polarized particles in a chain over a distance.

Faraday uses this reasoning to show that, unlike Bosovich's theory of atoms, particles that make up lines of force are not mere mathematical points. Force, therefore, cannot behave like the sensible parts of time and space. These material manifestations of the formal, precisely because they are finite, must be representable in terms of infinitesimals. Lines of force, moreover, must be definite in number, or else they would not be able to act upon one another through induction. We can say, then, that there is no such thing as an infinite form of force of which sensible force partakes.

What does this mean for philosophy? We have shown that it is possible to fit force into either of these philosopher's models, and one wonders whether Faraday shies away from using Aristotle's terminology because, as a scientist, he feels more comfortable if the object of his studies can be classified as material rather than formal. We see force in everything – in shapes, in movement; why not in the formal cause? There is something about human nature that recoils at the idea that everything from the will of the brain to the drive of the soul can be chalked up to something akin to electric currents running through the body. But if we reject this theory, we must reject Aristotle. Everything can no longer be movement. Some things that have movement contain ponderable matter, and some do not, and, out of a pure love for the metaphysical side of human nature, we assert that there is more than that out there. And so we embrace the unmoving.

In some sense, our world is changed radically when we say it is governed by infinite expanses of unalterable space and time. In another sense, Aristotle simply becomes more relatable. Pure space and time, if they are similar to anything, are like Aristotle's prime mover. But while that infinite unmotion was beyond our grasp, parts of time and space are easily understood on earth. If we could understand those parts as infinitesimals, and so better imagine the infinite nature of their forms, we can come even closer to metaphysical truth.

¹ Manual page 44

² Faraday, Michael, and Howard J. Fisher. *Faraday's Experimental Researches in Electricity: Guide to a First Reading*. Santa Fe, NM: Green Lion, 2001.

Notes: