

# Science Fiction in the classroom: Using *Rollback* to discuss concepts in Adulthood and Aging

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## Introduction

Even in the most well-equipped classroom, there are times when instructors struggle with conveying complex or abstract concepts to students. In these instances, it is helpful to have an exemplar from which to base a discussion. This is especially true for students taking an Adult Development and Aging class, as 18 to 21 year olds rarely have the ability to see past the “old” age of 30, much less past retirement and beyond. For those in their peak of physical and mental ability, contemplating aching joints, brittle bones, and senile moments may be just as intangible and unfathomable as a full-fledged adult trying to grasp all of the technological facets of today’s social media, such as Twitter or Tumblr. In such situations, it is helpful to have common ground that provides concrete examples and gives concepts in a textbook meaning in real life.

In an Adult Development and Aging course at Alfred University, students read Robert Sawyer’s novel, *Rollback*, in addition to a traditional textbook. The novel is centered around two main characters: Don Halifax and his wife, Sarah. Dr. Sarah Halifax is an astronomer who decoded a message from an extra-terrestrial source almost 50 years prior; a second message has been received, and her expertise is sought to decode the second communiqué. Unfortunately, Sarah is 87 years old, and is on limited time. Even if she cracks the alien message, she will most likely not be around to further communication between the aliens and the humans. As a result, Sarah is offered a “rollback,” an expensive combination of genetic tweaking and surgery that restores a person’s physical age back to 25. She agrees to have the procedure done, under the one condition that her husband, Don, is offered the same procedure. While the rollback is unsuccessful on Sarah, leaving her inching closer to death, Don’s procedure is successful. As Don starts his life anew as a healthy 25 year old man with more than 80 years of life experience, we witness the advantages and disadvantages of finding the fountain of youth.

Broadly, this paper will illustrate several ways in which *Rollback* was used to highlight and explain problems and issues related to aging. Specifically, we will describe not only the benefits of using science fiction in the classroom, but how this book in particular was helpful in illustrating several major concepts addressed in an Adult Development and Aging course.

## Science Fiction in the Classroom

Although science fiction has traditionally been relegated to the realms of “nerds,” the adoption of many science fiction themed novels and ideas for TV sitcoms and films has made this genre a mainstream in popular culture such as the television series *Heroes* or the recreation of the *Star Trek* films. Besides pure entertainment, science fiction provides a unique venue to explore the “what-if” without the current cultural or technological restrictions. It also allows students to discuss emotionally volatile or sensitive topics in a relatively safe forum, slightly less constrained by the trappings of political correctness and moral judgment. Good science fiction also provides an introduction to basic science, as well as analytical and critical thinking skills vital to dissecting the plausible from the impossible. Perhaps most important, a good story can make even the most abstract of concepts tangible, thus making ideas accessible to students with

myriad backgrounds. It is these benefits of the genre that are the most helpful in the classroom (Czerneda 2006; DeGraff & Gagne 2008; Kukaswadia 2013).

Using thought experiments to stimulate students' thinking is not a new approach to teaching (Marzano 82). However, using science fiction to ask "what if?" can provide students the opportunity to think and conjecture beyond current scientific boundaries. For example in the novel, *Rollback*, one of our protagonists is asked if she would want to undergo a rollback procedure, essentially reversing the effects of aging on her physical form and regressing her back to the biological age of 25. While the limits of our current technology might make this outlandish to contemplate by our standards, the feasibility of this option in the future of the novel opens myriad dilemmas on multiple levels. Class discussions can require students to debate societal implications of life-extension technology by asking questions such as:

- What if we could have access to a rollback?
- Who "deserves" a rollback? Who does not?
- What would the implications [of a fifty year life extension] be for our economy? For medications? For the medical industry?
- Would limits be placed on reproduction?
- Is it fair to keep some genetic combinations alive indefinitely, at the potential expense of diversity?
- Should extended life alter our definition of marriage?

Discussions can also focus on personal implications. For example:

- How would you live your second life differently?
- How do you think your relationship with your children and grandchildren change?
- When Sarah and don tell their adult children about the procedure, one remarks, "But you'll have to agree to do more babysitting" (Sawyer 56). How would your role as a grandparent change?
- How do you think you would be affected by having grandchildren potentially older than you?

Although we may never know the results, questions such as these help students to work through the consequences of certain actions or discoveries.

Science fiction is also often the forerunner of scientific advancements. From 3D printers to self-driving cars, many items portended by science fiction writers have come to fruition during the last few decades (cf. Easton and Klein-Dial 2010; Heusner 2010). Thus, using a science fiction novel in class has a touch of realism, as Robert Sawyer's predictions of the future existence of a rollback procedure teeter on the edge of plausible. Indeed, researchers have found evidence that lengthening telomeres and reducing free-radicals have life-extending effects; organ replacements and prostheses do exist. The idea of a rollback existing in our or in our children's lifetimes lies on the continuum of plausible and possible, given the right future circumstances. One student commented, "I liked the fact that is seemed surreal. That it really could occur in the future and how that could change the way in which we live."

Students will often cite personal feelings of inadequacy as reasons for not fully participating in class discussions (Rocca 191). There is a lingering discomfort in one's values being "evaluated" in some way by the professor and/or peers. Moreover, students may struggle to come up with personal examples or explanations to illustrate a point in class. In this instance, using a science fiction novel as the basis for discussion provides neutral, objective characters and circumstances through which to explore emotionally sensitive topics, thereby putting the focus

on the characters and situations described in the novel, and taking some of the “pressure” off students to articulate thoughts based on personal values or feelings.

For example, students in our class were asked to characterize Sarah and Don’s marriage before and after the rollback procedure, and to explain whether Don’s extramarital affair was justified by circumstance. Focusing the discussion on common, fictional characters reduces the reliance on personal anecdotes to substantiate points. The motives and intentions of the characters became the point of discussion, and those who had read the book could cite specific examples from the story to back up their points.

From the student’s perspective, the personal connection to the characters give meaning to the adversities faced in the novel, translating into a student’s empathy and greater understanding of the struggles associated with aging and adulthood. Where a twenty year-old college student may not be able to put themselves in the shoes of an aging adult when presented with scientific happenstances conveyed in a science course, a twenty year-old college student *will* be able to put themselves in the shoes of an artistically presented fictional character. The empathy that is derived from reading and engrossing oneself in a fictional world bridges the gap between young adulthood and the progression of later aging.

In addition, the use of a mutually read fictional novel in the classroom creates a personal connection to the professor. The students now have something in common with their teacher: they are both along for the ride of the story of *Rollback*. Opinions, whether positive or negative, of the book can be shared, where objective facts regarding a standard science course are less relatable or debatable. Merely regurgitating facts at students leave no room for discussion or intellectual compromise. Being able to comment on the strong like or dislike of a character and hearing their professor feel similar sentiments breaks down social barriers and earns credibility for the professor, who can now relate to their students on a level that is not only education-based but also entertainment-based.

### **Using *Rollback* to teach Adulthood and Aging**

In our Adult Development and Aging course, we used *Rollback* to help make some of the abstract concepts more concrete and relatable. Things that are read about in a textbook take on realism when they are being spoken by a living character, rather than an example from a textbook. Using the novel *Rollback* was instrumental in making aspects of physical, emotional, and social aspects of aging more substantial and relatable to young adult students.

In classes that deal with adult development and aging, the themes of longevity, immortality, and quests to “live long and prosper” are pervasive; students often want to know when “things will go downhill,” and fear aging due to its proximity to death. Much of the cutting edge research in this field has focused on finding the cure for aging, or at least maintaining the fountain of youth for as long as possible. Thus, several classes focused on the current theories underlying the senescence process, such as telomeres, free radicals, transcription errors and the Hayflick Limit. Several of these concepts were addressed by the character McGavin, who said “my cells, my telomeres, my free-radical levels, and every other indicator say I’m 25... like a code rewrite – it’s a *real* fix. You don’t just look young again, you *are* young” (Sawyer 41). This theme of true longevity is repeated several times throughout the entirety of the novel. Through this theme, we see the science in the science fiction; some or all of these would have to be addressed in order for an actual rollback to transpire.

In class, it is often difficult to convey changes that occur to one’s body and ability with advancing age; although students read about it, inhabiting twenty-year old bodies creates a

disconnect between information and experience. In the opening pages of the book, we meet Don at his age of 87, and in a few brief pages, the reader gets a sense of the physicality of aging. Don describes walking across the room to meet his children and grandchildren, “each footfall punctuated by a tiny jab of pain” (Sawyer 15). Upon seeing his young granddaughter, he “bent low, feeling twinges in his back as he did so. Don then turned to see his wife “coming down from the upstairs, one painful step at a time, gripping the banister with both hands...” (15). While sitting side by side on the couch, Don “would have liked to put his arm around Sarah’s shoulders as they sat side by side...but it pained him to rotate his own shoulder that much” (23). When asked if he would marry his wife of 60 years again, Don, “slowly, painfully lowered himself onto one knee, so that he was at eye levels with his seated wife. He reached over, took her hand, feeling the thin, almost translucent skin sliding over the swollen joints, and looked into her pale blue eyes” (17). The description of this aged man interacting with his family members conveys a richness that is beyond what students would find in a typical textbook.

The characters in the novel *Rollback* also provide an opportunity to discuss various aspects of social aging. For one, the characters discuss their acceptance of advancing age and inevitable death. Don told Sarah about how he met an old friend for coffee, and both realized it was the last time they would see or even speak to each other, “a final accounting” (Sawyer 45). Sarah remarks, “so often... I’ve thought, ‘Well, that’s the last time I’ll visit this place.’ It’s not even all been sad... there are plenty times I’ve thought, ‘Thank God I’ll never had to do *that* again” (46). Although a textbook may provide the clinical aspects of preparing for death, the characters provide insight into what those terms really mean.

The characters in *Rollback* also present the gains, losses, and compromises associated with aging. For example, when old-Don saw his grand-daughter, “He wanted to lift Cassie up, but that was impossible. He settled for letting her get her little arms around his neck and giving him a squeeze. Cassie was oblivious to the fact that she was hurting him, and he endured it until she let go” (15). This single passage explains some of the tensions of selection and compensation that occur on a daily basis (P. Baltes and M. Baltes). As one faces infirmity, choices become more important, and consequences of actions might be weighed more heavily.

The situation created by Don and Sarah also offered an opportunity to discuss values within the class on several different topics. For example, after Don’s successful rollback, he engaged in an extramarital affair with one of Sarah’s graduate students. The class expressed much disagreement – while some thought that Don’s cheating was justified by circumstances, others denounced his lechery (quite vehemently). This led to a discussion of the meaning of marriage, and produced questions such as,

- Should you be expected to stay with the same partner for a second lifetime?
- Given greater longevity, should marriages have ‘leases’ and contracts, with options for renewal?
- What makes a ‘good’ marriage?”

A second area of discussion focused on childbearing and family:

- Do you have a right to start a second family with your rollback if your first is still living?
- Should there be a limit on how many children one person can produce?
- How are intergenerational relationships altered if the parent, or grandparent, is now younger than the children?

A third area of discussion focused on power and finance. Given the relative expense of the procedure, only the wealthiest would be able to afford to have a rollback, and would

presumably be able to afford the costs of second education, occupational retraining, and health insurance.

- Is it fair to only offer a life extension to the wealthy?
- Would wealth stay forever in the hands of the few?
- Would there be time limits on investments?
- If such a procedure was offered to the lay person, how would you fund a second life?

Finally, some students commented on cultural implications – by offering rollbacks, the last survivors of wars, disasters, or the Holocaust would be able to be kept alive to provide first-hand accounts of their experiences, providing a cultural memory that would transcend mere writings.

- Where would be if the likes of Einstein, Shakespeare, or Ghandi had been offered a rollback?
- How would we determine who had the right to be preserved?
- Would culture stall and stagnate, or would we become wiser and leap forward with the benefit of a lifetime of experience?

Although there are no answers to these questions, it allowed some students to question their own values.

Students were given a survey at the end of the course in order to assess the effectiveness of using *Rollback* in addition to a traditional textbook. Of those who answered the survey, 70% either agreed or strongly agreed that the novel was enjoyable, worthwhile, and 80% agreed or strongly agreed that reading a novel was preferable to reading an academic text. One student wrote, *“It gave me another insight about aging than the textbook...I feel I gain more information this way.”* With respect to content, 78% of students agreed or strongly agreed that the novel helped them to understand concepts related to the physical aspects of aging, 83% indicated that it helps them to understand concepts related to the emotional aspects of aging, and 90% indicated that the novel helped them to understand concepts related to aging, marriage and relationships. One student commented, *“...it was like case study meets thought experiment...[it] helped me think about what the text offered in contextual ways rather than detached academic ways.”* Another wrote that the novel, *“described aspects of aging in an understandable way, and made me reflect on my own life so far and see what changes I can make.”* Finally, one student wrote, *“It was nice to read something other than notes and a textbook. Gave another aspect on aging that the text books can’t.”* Although some students commented that science fiction “wasn’t their thing,” many recommended using the novel in my future classes, with the condition that I allow more time for class discussion.

### **Summary**

Overall, using science fiction in the classroom can be used to stimulate students’ thinking and facilitate discussion. Connections to both the characters in the novel and to classmates during discussion of the novel can increase students’ interest in the course, increasing investment and participation. In a particular course, using a novel (and the characters therein) to explore particular issues brings a sense of realism and connection to the material that transcends the offerings of a traditional, academic, college textbook.

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