ROMODA COLLEGE
ST. LAWRENCE UNIVERSITY

Alan Turing at Work: Code Puzzling and Machines Thinking
FRPG 1032

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> *The central seminal figure in this computer revolution was Alan Turing, whose outstanding*
> *originality and vision was what made it possible, in work originating in the mid 1930s.*
> *Andrew Hodges*

Alan Turing's life is the stuff of a twentieth century Shakespearian tragedy, and he touches your life every time you interact with a digital object: his 1936 paper **"**On Computable Numbers, with an Application to the Entscheidungsproblem" foresees the interaction of hardware and software. He also remains aspirational for the field of computing, insofar as the "Turing Test" outlined in his 1950 paper "Computing Machinery and Intelligence" remains a standard assessment of whether we can judge a machine to be thinking. You're going to be introduced to Alan Turing, but not strictly as a historian might, rather through you'll consider Turing's legacy in computer code. With Alan Turing as a context, we are going to examine what computer code is and why people write it. Yes, people write computer code to make inconsequential gizmos they can sell to you, but a program is a construct of thought that is *composed*. Programs bespeak their developers, and we would like to suggest the impulse to program is at its origins creative, not mercantile. We shall explore this by looking at the nuances of coding, and by reaching out to Alan Turing through a vision of coding as a practice within the reach of the arts and within the reach of anyone with the patience to program.

Required Reading

> *It's harder to read code than to write it.*
> *Joel Spolsky*

Bisti, Jeff. "Introduction to Cobol Programming Language." YouTube Video, 9:30. Posted by
    IBM Developer. April 14, 2020. https://www.youtube.com/watch?v=ZOLB4KqHmBs.

Chandra, Vikram. *Geek Sublime: The Beauty of Code, the Code of Beauty.* Minneapolis:
    Greywolf Press, 2014.

Knuth, Donald. "Computer Programming as an Art." *Communications of the ACM*
   December 1974: 667-673. Accessed August 4, 2020. doi.org/10.1145/361604.361612.
   (on Sakai)

Leavitt, David. *The Man Who Knew Too Much: Alan Turing and the Invention of
   the Computer.* New York: W.W. Norton & Company, 2006.

The Little Seagull Handbook. 3rd ed. New York: Norton, 2017.

Liukas, Linda. "The Poetry of Programming." YouTube Video, 12:44. Posted by TEDxCERN.
   Nov 13, 2015. https://www.youtube.com/watch?v=-jRREn6ifEQ.

Lyman, Isaac. "When You Finish Reading This, You'll Know How to Code." *Noteworthy--
   The Journal Blog* (blog), March 23, 2017, accessed August 4, 2020,
   https://blog.usejournal.com/when-you-finish-reading-this-youll-know-how-to-
   code-721339942b51. **(on Sakai)**

Reed, Tara. "Building Apps Without Code." YouTube Video, 9:48. Posted by TEDxDetroit.
   Nov 13, 2015. https://www.youtube.com/watch?v=u1X9M5Idqfo.

"The Smartest Machine on Earth." YouTube Video, 52:14. Posted by SpaceDiscovery.
   May 5, 2015. https://www.youtube.com/watch?v=5Q67L0MCUwo

Turing, Alan. "Computing Machinery and Intelligence." In *The Essential Turing,* edited by
   Jack Copeland, 441-464. Oxford: Clarendon Press, 2004. **(on Sakai)**

Turing, Alan. "Chess." In *The Essential Turing,* edited by Jack Copeland, 562-568. Oxford:
   Clarendon Press, 2004. **(on Sakai)**

Ullman, Ellen. "Programming the Post-Human." *Harpers,* October, 2002. **(on Sakai)**

The Course

UNIX is simple. It just takes a genius to understand its simplicity.
Dennis Ritchie

We are contemplating a course that will be lecture and discussion and problem solving and
moments alone and moments in groups. This is an online course, there will be synchronous
Zoom classes (all together now!), and assignments that you'll do on your own, because there are
limits to what makes sense in Zoom. We had really no choice about going online, but within the
limits and possibilities of human interaction in online spaces, we are going to do all we can to
make Romoda College a college. We need *to be there* given the coronavirus hand we're dealt,
so two things—remember if you start to rack up absences it can't help but have an adverse effect
on your class participation grade (which is a major part of the semester grade). If the Pandemic
forces a drastic change in the University's academic calendar, we will adjust the class with the
guidelines of St. Lawrence's protocols. Also, because of the online circumstances of the course,

we have to **insist that work be on time**. The logistics of an online course are challenging—for the sake of everyone's sanity get work in by the deadlines, **late work will not be accepted**.

Speaking of "being there"(and class participation)--class participation figures into the grade. What do we mean by "participation?" Not simply talking everyday…"participation" is being prepared and looking for opportunities in the conversation where your preparation can energize or alter the flow of shared ideas. You don't have to be continually at the fore, but you need to be engaged with the course dialogue to the extent that your personality is part of the course composite. You can trust that if we am not happy with your participation you will hear from me long before the end of the semester. Short in-class writing assignments will figure into your course participation assessment.

Speaking of being there, our group discussion will happen in the Zoom environment. We need for you to have the video on when we are in class working together. Interacting in Zoom has its own set of foibles, but as we try to come together as a class we'll all need to *face the music* (insofar as the music is a little camera in the computer). If there is a technical issue that is precluding your being able to be video-present please contact Paul and/or Corey immediately. We'll help. One thing that will prevent your personality from being part of the course composite is if you have your nose in some manner of iDistraction. Life online even before COVID-19 challenged sustained concentration, but at university (and this was the case in the days of typewriters) harnessing your concentration at this moment wherein you rattle with the vitality of youth with a goal of understanding the originality innate within you is *reason one* to go to college.

In Summary, your responsibilities: Be in class, be prepared, participate, ask questions, offer constructive criticism, be respectful of others and mindful of the Laurentian Pact, stay healthy!

Our responsibilities: Carry through on the vision of what the course is and where it should go; be able to speak specifically to student questions and concerns; evaluate work promptly; not get bogged down in details and lose sight of what learning is; and to stay healthy!

Community Assistants: Liam Sullivan, Cierra Van Ness

First Year Program Philosophy and Goals

The First-Year Program (FYP) and First-Year Seminar (FYS) are the first steps in a four-year process of helping you meet the University's Aims and Objectives and the broader goals of a liberal education. The faculty of the FYP and FYS see themselves as partners and mentors in the process of working with you to acquire the intellectual habits of mind, the writing, speaking, and research skills, and the ethical self-reflection that are at the core of a liberal education. The FYP and FYS will ask you to consider new perspectives on the world and your place in it and will challenge you to confront many of the hidden assumptions you bring to college with you. We hope to open you to new ideas, help you to see the complexity of the way in which knowledge gets produced and used in society, and encourage you to see yourself as an active contributor in

making the world a better place. The course topics, the texts you will read, listen to, and watch, the in-class and out-of-class activities you will engage in, and the writing, speaking, and research assignments you will work on are all designed to introduce you to the depth of critical thinking and the quality and complexity of the communication skills that will be expected of you at SLU and as a citizen of an increasingly diverse society.

First and foremost among our goals are those related to your abilities as a communicator. The work of the FYP and FYS asks you to design and deliver written, spoken, performed, and/or visual texts that demonstrate basic skills in the relevant modes of communication and with an increasing degree of rhetorical sensitivity. Our focus on "rhetorical sensitivity" means that we expect you to cultivate the awareness that all of your communication, whether formal or informal, involves having to make choices about your messages, whether written, spoken, aural or visual. To become a good communicator, you need to recognize that the creation of meaningful and powerful written, spoken, performed, or visual texts involves both a creator and an audience, and that therefore the voice you adopt in your communication, the audience you imagine yourself communicating to, and the social and ethical context of the content, matter a great deal in creating such texts. One important way to become a better communicator is to become a better critical reader, viewer, and listener, which is why we will ask you to engage challenging materials in a variety of forms and work with you to learn how to interpret them.

Learning to read, listen, write, speak, do research and/or perform well also requires feedback. As faculty, we submit our work for feedback from colleagues all the time, and giving and receiving constructive feedback from both friends and strangers is central to collaborative work in any field and is itself a form of critical thinking and learning. We further recognize that this feedback process is not linear and that good communication requires that you continually rethink, restructure, and revise your work in order for it to be your best. This is why we require that your writing, speaking, and performance assignments be "projects" that include preparatory exercises and multiple drafts or rehearsals, all of which ask you to continue to reflect critically on the choices you have made in the texts that you produce. Furthermore, we see all of these forms of communication as complementary and intertwined, which is why many of your assignments will ask you to integrate elements of the written, spoken, performed, and visual. Finally, developing good habits of critical inquiry and communication also means reflecting on the ethical dimensions of how your work represents that of others, thus one of our goals is to help you to understand both the nature of academic integrity and the social processes by which knowledge is produced and represented.

To ensure that the program is meeting its stated goals, all FYP and FYS syllabi are read by other faculty in the program to determine if they include a variety of assignments that foster the writing, speaking, research, and critical thinking goals of the program. All FYP and FYS courses have to be approved by faculty in the program before they are offered.

Course Schedule

Complete assignment descriptions are available on the Romoda College Sakai site, which is the platform for the work of the college. On the day they are due, assignments must be received by 11:59 p.m. unless otherwise noted.

August 25th & 27th

Course Introduction, Introduction Sakai site and business of the course, introduction to Hypothesis. Discussion of syllabus.

Assigned: Syllabus, "When You Finish Reading This, You'll Know How to Code," Tara Reed TEDx talk, write your name in binary, *The Man Who Knew Too Much.*
Due: Syllabus annotation August 26th, "When You Finish Reading This, You'll Know How to Code" August 27th, Tara Reed TEDx talk questions, August 27th. Write your name in binary videos, September 1st.

Sept 1st and 3rd

Report on write your name in binary, Turing in World War II, definition of concise writing, Sieve of Eratothenes.
Assigned: Describe a computer to a 6th grader, "Computer Machinery and Intelligence.
Due: Describe a computer videos Sept 7th, *The Man Who Knew Too Much* Sept 10th.

Sept 8th & 10th

The Man Who Knew Too Much discussion, mathematical logic, summary and paraphrase, "Computing Machinery and Intelligence."
Assigned: "Computing Machinery and Intelligence" annotation, "Computing Machinery and Intelligence" response paper.
Due: Describe a computer to a 6th grader, "Computing Machinery and Intelligence" annotation Sept 10th, "Computing Machinery and Intelligence due Sept 13th.

Sept 15th and 17th

Turing Machines, Caesar Ciphers
Assigned: Turing the Thinker essay
Due: Turing the Thinker essay first drafts, Sept 19th.

Sept 22nd and 24th

Conferences with Paul and Corey, introduction to artificial intelligence.
Assigned: "The Smartest Machine on Earth" Youtube, **"**Programming the Post Human"

Due: "The Smartest Machine on Earth" Sept 22nd , Turing the Thinker final draft Sept 28th, "Programming the Post Human" Sept 29th.

Sept 29th & Oct 1st

"Programming the Post Human," "Computer Programming as Art."
Assigned: "Computer Programming as Art," *Geek Sublime.*
Due: "Computer Programming as Art" annotations Oct 1st at 11:00.

Oct 6th & 8th

Mid-semester writing seminar.
Assigned: Linda Liukas TEDx talk and questions, *Geek Sublime.*

Oct 13th & 15th

Linda Liukas TEDx talk, her presentation to the class, begin Geek Sublime discussion.
Assigned: *Geek Sublime* as memoir essay.
Due: Linda Liukas response questions Oct 13th.

Oct 20th & 22nd

Introduction to SLU Libraries, continue Chandra discussion, Chandra beautiful code search.
Assigned: Chandra beautiful code search, Aesthetics and Code essay first draft.
Due: *Geek Sublime* as memoir essay, Oct 20th

Oct 27th & 29th

Continued Geek Sublime Discussion, Is Cobol beautiful?
Assigned: "Introduction to Cobol Programming Language"
Due: "Introduction to Cobol Programming Language" Oct 29th, Aesthetics of Code essay first draft, Oct 29th

Nov 3rd & 5th

Library algorithm, conferences with Corey and Paul.
Assigned: Aesthetics of Code final draft.

Nov 10th & 12th

Introduction to Hour of Code Concept

Nov 15th & Nov 17th

Public Speaking Workshops revisit "Poetry of Programming" and explaining computer to a 6th grader

Assigned: Hour of Code design "Final Exam" presentation
Due: Aesthetics of Code essay Nov 15th

Remote End of Semester

Meeting on Hour of Code assignment progress.

Assessment

Speaking Assignments

- Explaining a computer to a sixth grader. This is a one page dialogue that will ask you to consider the Isaac Lyman essay. 10 points.
- In the spirit of teaching code and making code available to the people, design an Hhour of code activity. You'll need to specify an audience (kids or college students or a group of, say, high school teachers), you'll need to specify a goal, you'll need to specify an outcome. 20 points.

Writing Assignments

- Syllabus annotation (in Hypothesis) 5 points.
- Computing Machinery and Intelligence annotation 5 points
- Essay evaluating Alan Turing's claims in "Computing Machinery and Intelligence." 10 points.
- Discuss one of Alan Turing's great accomplishments. The accomplishment you discuss ought to be drawn from one of the following moments in Turing's life:
  - "On Computable Numbers, with an Application to the Entscheidungsproblem"
  - Turing's service at Bletchley Park
  - "Computing Machinery and Intelligence"
  - "Chess"
  10 points (first draft) and 10 points (final draft).
- Computer Programming as Art annotation 5 points
- Identify an autobiographical passage in *Geek Sublime* that you think is particularly telling about the man and explain why you think it is telling. 10 points
- Define in your own words what constitutes beautiful computer code. For this essay, it is recommended that you refer to the Chandra text. 10 points (first draft) and 10 points (final draft).

Each writing assignment will be graded with the following questions in mind:
1. Is this essay on topic?

2. Does the essay answer all the relevant questions?
3. Does the essay demonstrate familiarity with relevant course material?
4. Does the essay cite assigned readings where appropriate?
5. Is the essay concise?
6. Is there a discernible, coherent structure to the essay?
7. Does the essay meet other requirements, specific to the assignment and spelled out on the assignment prompt?
8. Does the essay have "verve"? *Verve* is originality. Writing wherein verve is palpable is not boring (boring is never good), and verve is taking an assignment somewhere unique to your creative reading. Verve counts.

Class Participation

Along with the evaluation Corey and Paul will make about your contributions to our discussions, activities and projects will be graded as "Complete" or "Incomplete". Complete projects are ones that meet the following criteria:

The activity or project was completed successfully, OR a sincere effort was made to complete it. For example, if you were assigned to program a Turing Machine to complete a simple task, you might have either programmed the machine to successfully complete the task; alternatively, you might have tried your hardest but failed to write a program that does not complete the task. In the second case, you would receive a grade of "Complete" for the program you ended up with, because you made a sincere effort to program the machine. 30 points.

Grading

Points Per Assignment	Final Evaluation
95-90	4.0
90-85	3.75
85-80	3.5
80-75	3.25
75-71	3.0
71-67	2.75
67-63	2.5
63-59	2.25
59-54	2.0
54-52	1.75
52-50	1.5
50-48	1.25
48-47	1.0

The Academic Honor Code

The Academic Honor Code cited below was designed by students and approved by the elected student government, the Thelomathesian Society, on February 26, 1992.

All students at St. Lawrence University are bound by honor to maintain the highest level of academic integrity. By virtue of membership in the St. Lawrence community, every student accepts the responsibility to know the rules of academic honesty, to abide by them at all times, and to encourage all others to do the same.

Responsibility for avoiding behavior or situations from which academic dishonesty may be inferred rests entirely with the students. Students should be sure to learn from faculty what is expected as their own work and how the work of other people should be acknowledged.

Academic Honesty

A major commitment of the University is "to the intellectual development of the student" (St. Lawrence University Aims and Objectives) which can be achieved only by strict adherence to standards of honesty. At St. Lawrence, all members of the community have a responsibility to see that these standards are maintained. Consequently, St. Lawrence University students will not engage in acts of academic dishonesty as described below.

Academic Dishonesty

•　　It is assumed that all work is done by the student unless the instructor/mentor/employer gives specific permission for collaboration.

•　　Cheating on examinations and tests consists of knowingly giving or using or attempting to use unauthorized assistance during examinations or tests.

•　　Dishonesty in work outside of examinations and tests consists of handing in or presenting as original work which is not original, where originality is required.

The following constitute examples of academic dishonesty:

•　　Plagiarism: Presenting as one's own work the work of another person--words, ideas, data, evidence, thoughts, information, organizing principles, or style of presentation--without proper attribution. Plagiarism includes paraphrasing or summarizing without acknowledgment by quotation marks, footnotes, endnotes, or other indices of reference (cf. Joseph F. Trimmer, A Guide to MLA Documentation).

•　　Handing in or presenting false reports on any experiment.

•　　Handing in or presenting a book report on a book one has not read.

•　　Falsification of records.

•　　Supplying information to another student knowing that such information will be used in a dishonest way.

• Submission of or presentation of work (papers, journal abstracts, oral presentations, etc.) which has received credit in a previous course to satisfy the requirement(s) of a second course without the knowledge and permission of the instructor/supervisor/mentor of the second course.
• Knowingly making false statements in support of requests for special consideration or special timing in the fulfillment of course requirements.

Claims of ignorance and academic or personal pressure are unacceptable as excuses for academic dishonesty. Students must learn what constitutes one's own work and how the work of others must be acknowledged. Any student found guilty of academic dishonesty by the Academic Honor Council may have a letter placed in his or her permanent file.

St. Lawrence students are required to electronically sign the following statement prior to registration for classes:
"I hereby acknowledge that I have read the above document and I understand my responsibility in maintaining the standards of academic honesty at St. Lawrence University."

The Academic Honor Council's Constitution can be found at: https://www.stlawu.edu/academic-affairs/resource/academic-honor-policy.   For information about academic integrity or the Academic Honor Council issues, contact the Dean's Office at 315-229-5993.

Early Warning Policy

Each semester between the third and sixth weeks of classes, faculty will identify students of concern to the Office of Academic Support. The reasons faculty might choose to issue an early warning statement to a student in an FYP or FYS course include:

• Concerning pattern of absence or tardiness
• Consistent turning in of sub-standard work
• Failure to submit some or all course work
• Chronic late submissions of course work
• Failure in one or more assignment(s)

The Early Warning (EW) system is not meant to be punitive. It is intended to help students who are struggling in their courses to recover from early setbacks; EWs do not appear on a student's transcript. EW's go to the student's advisor as well as the Coordinator of Academic Support, who will then contact the student with offers of support and resources. Students who receive an EW, should make an appointment to see their Academic Advisor and/or the Coordinator of Academic Support to develop a recovery plan.

The WORD Studio
Contact the WORD Studio to:

- Record and get feedback on your oral presentations
- Work on a powerpoint or prezi
- Refine your reading skills and information literacy
- Get help understanding an assignment
- Learn new vocab and correct sentence structure
- Learn to avoid plagiarism through proper citation

Please note that all our services are by appointment only. Schedule an appointment online by googling the WORD Studio, going to our website, then hitting the big box labeled "Schedule an Appointment." If you have questions, please email the Director, Dr. Lucia Pawlowski, at lpawlowski@stlawu.edu.

Academic Support

The Office of Academic Support (https://www.stlawu.edu/academic-support) helps students find and utilize the tools they need for academic success. The office also manages the Early Warning system, which identifies students who are struggling in the first weeks of the semester and helps them get back on track. Through workshops and individual meetings, students learn about time management, active reading and note-taking skills, semester and weekly planning, and test preparation to improve their learning and academic performance.
- Coordinator of Academic Support: Tina Tao, ktao@stlawu.edu,
- Coordinator of Academic Development: Colleen Coakley, ccoakley@stlawu.edu, • Coordinator of Academic Engagement: Matt McCluskey, mmccluskey@stlawu.edu,

Student Accessibility Services (SAS)

If you have a learning difference/disability or other health impairment and need accommodations please be sure to contact the Student Accessibility Services Office (315-229-5537) right away so they can help you get the accommodations you require. If you will need to use any accommodations in this class, please talk with me early so you can have the best possible experience this semester. Although not required, I would like to know of any accommodations that are needed at least 10 days before a quiz or test, so please see me soon.

For more specific information visit the Student Accessibility Services website https://www.stlawu.edu/student-accessibility-services or email studentaccessibility@stlawu.edu to set up an appointment with one of the directors.

If you are Color Vision Deficient, the Student Accessibility Services office has on loan glasses for students who are color vision deficient. Please contact the office to make an appointment.

Research Consultations for Students

Our research consultation program connects you with a librarian on the reference staff who can give you more extensive one-on-one help with a research paper or project. This help involves assisting you in assessing an assignment, devising a research strategy, and reviewing indices and databases appropriate to the assignment. To make an appointment, contact:

- Rhonda Courtney, rcourtney@stlawu.edu,
- Gwen Cunningham, gcunningham@stlawu.edu,
- Paul Doty, pdoty@stlawu.edu,