**Economics of Discontinuous Change 1818: Last 1/4 Exam – April 2020**

Open book. You may refer to your notes and readings.   
Return the exam by email to [amadeoholl@gmail.com](mailto:amadeoholl@gmail.com) by Tuesday 4/28 @ 10pm, using this form.

E-mail subject line: LAST NAME, First Name\_ec1818-mid-term  
Attach file as MS-WORD or PDF with file name:  LAST NAME-First Name\_ec1818-midterm\_DATE

**Question 1**: Systems Dynamics models and Artificial Agent models are different ways to simulate social and other phenomenon. Explain what they are and give the similarities and differences between them. Which is likely to work better if there is a lot of heterogeneity in behavior?

**Question 2:** You tell a friend that he/she is cool and is also not cool. Wait a second, your friend says, you make no sense. Either I am cool or I am not. Explain the logic of your statement. Under what system can something be X and not X?

**Question 3:** The US wants to know if a nation can be trusted or not when it promises to eliminate nuclear weapons. Here is some data to help it decide trustworthiness

Democratic government = D

GDP per capita greater than > $5,000 per year = G

Majority of population roots for Red Sox = R

You observe 6 examples out of the possible 8 (=23 )configurations of cases

DgR Trustworthy

DGR Trustworthy

DGr Not trustworthy

Dgr Not

dgr Not

dGR Not

Write out the QCA Boolean truth statement for being trustworthy and the QCA Boolean truth statement for being not trustworthy. Simplify the statements. What might you assume about the missing cases?

**Question 4:**  HEADLINE :BATTLE OF EXPONENTIAL CURVES **The number of scientific papers on the novel coronavirus is doubling every 14 days** Not only are papers appearing in scientific journals but they now appear in pre-prints and twitter claims and who knows where else. What technique might you use to summarize the findings in the papers so that policy-makers can decide what to do next? To what extent, if at all, might the technique lead to better policies?