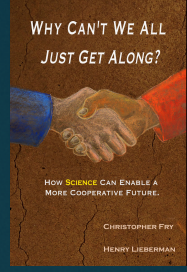


How Science Can Enable a More Cooperative Future

HENRY LIEBERMAN[1] AND CHRISTOPHER FRY[2]

UNESCO CROSS-CULTURAL AMBASSADORS FOR PEACE

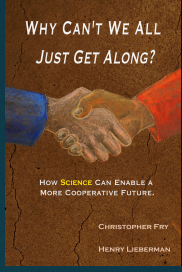
[1] MIT COMPUTER SCIENCE & ARTIFICIAL INTELLIGENCE LAB

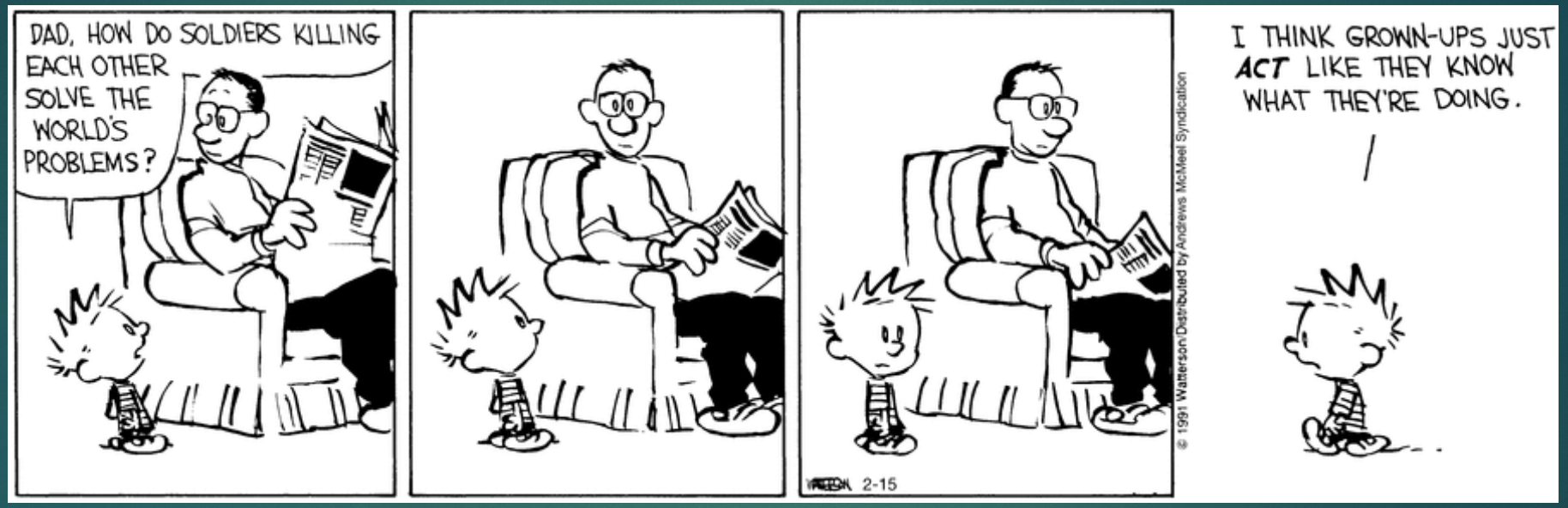
[2] HADDINGTON DYNAMICS

{LIEBER, CFRY}@MEDIA.MIT.EDU

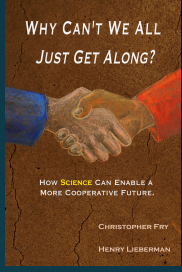
whycantwe.org

Well… do we know what we're doing?



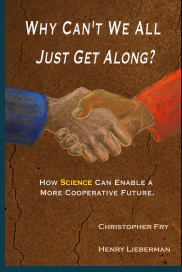


What are the biggest problems we face today?



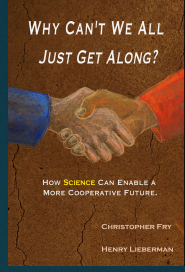
- Nuclear war
- Scarcity
- Lack of good ideas
- Incentive Structures
- Lack of understand of nature
- Lack of mutual understanding
- Corruption
- Lack of systems thinking
- Greed
- Self-interest outweigh community
- Tribal and siloism
- Unnecessary suffering

What are the biggest problems we face today?

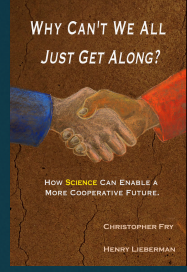


- Coronavirus pandemic
- Economic collapse
- Poverty and inequality
- Climate crisis
- War
- Pollution
- Political gridlock
- Authoritarianism
- Discrimination
- Food supply
- Crime
- Justice
- Education
- Transportation
- Health care
- Mental health
- Domestic violence

We can achieve peace and prosperity in *our* lifetime

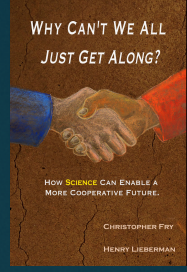


But not how you might think…



- Not just via better technology…
  - (though we do need better tech – stay tuned!)
- Not by electing "good leaders"
- Not by peace treaties
- Not by successful companies

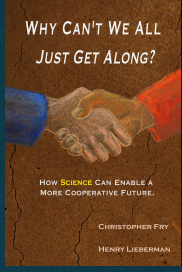
But not how you might think…



- Not just via better technology…
  - (though we do need better tech – stay tuned!)
- Not by electing "good leaders"
- Not by peace treaties
- Not by successful companies

- … but by people learning to become more cooperative with one another

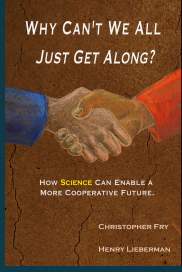
Most of today's social problems are due to a failure to cooperate



- The tradeoff between *cooperation* and *competition* is fundamental to solving society's problems
- Technological advances
  - *Increase* the value of cooperation
  - *Decrease* the value of competition

- Today's institutions are set up for *competition*:
  - Competition between products, companies in the economy
  - Competition between candidates, parties in government
  - Competition between nations, ethnicities, religions, etc. etc.
- How do we make our institutions more cooperative?

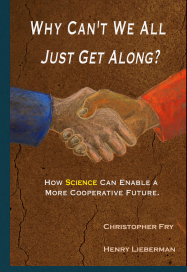
Well, will people *ever* learn to cooperate with each other?



- Pessimist's answer: No
- Our answer: YES! (but it's gonna take some doing)

- What do you believe about "human nature"?
  - Intrinsic vs. Extrinsic Motivation
  - Scale up interpersonal and small-group cooperation

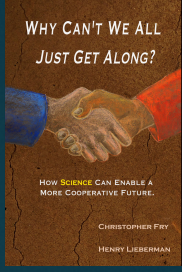
Pessimistic scenarios imagine pouring tech into our present systems



- Capitalist or Socialist economics
- (US-style) Democracy (voting, parties, exec/legislative/judicial…)
- Nation-state international order

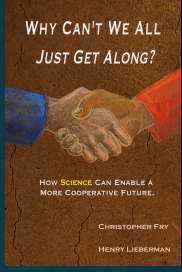
- … but those systems were designed for *their* times: 18th and 19th centuries
- Let's redesign these systems for the 21st Century!

The curriculum

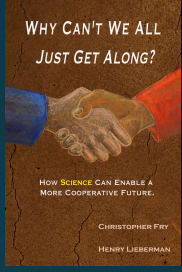


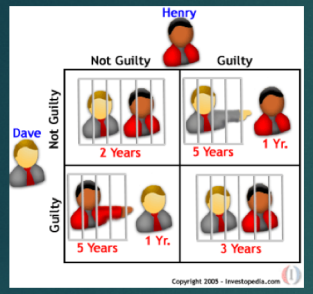
- What keeps us from getting along?
  - Math, evolutionary theory
- Does human nature allow us to get along?
  - Psychology
- Can government help us get along?
  - Reasonocracy
- Can we get along economically?
  - Makerism
- What about…
  - Education, Transportation, Defense, Justice, etc. etc.

Vicious and Virtuous Cycles

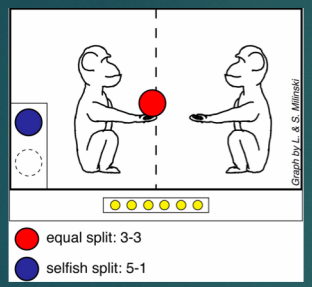


Scarcity is the driver of competition

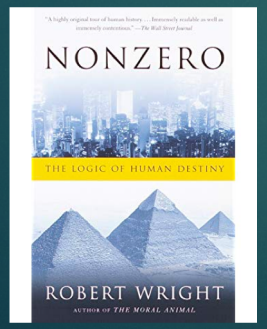




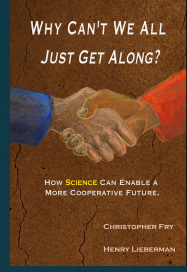
- The Prisoner's Dilemma
  - Mathematical model of the tradeoff between cooperation and competition



- The Ultimatum Game
  - Model of sharing of results of cooperative effort

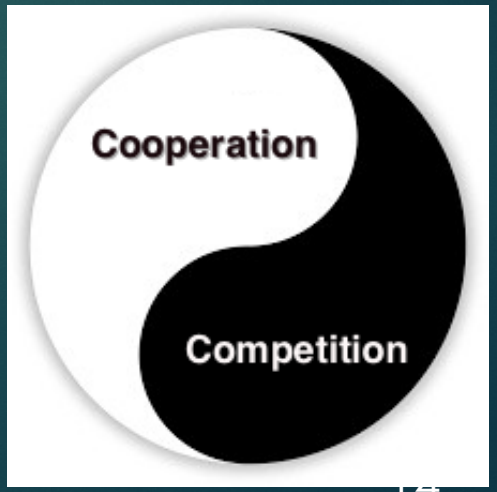


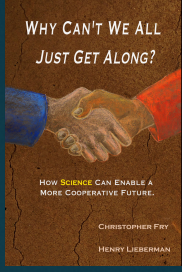
- Positive-sum Evolution
  - Evolution selects for positive-sum outcomes



The Central Argument (1 of 7)

The *tradeoff* between cooperation and competition determines whether our society will succeed or fail

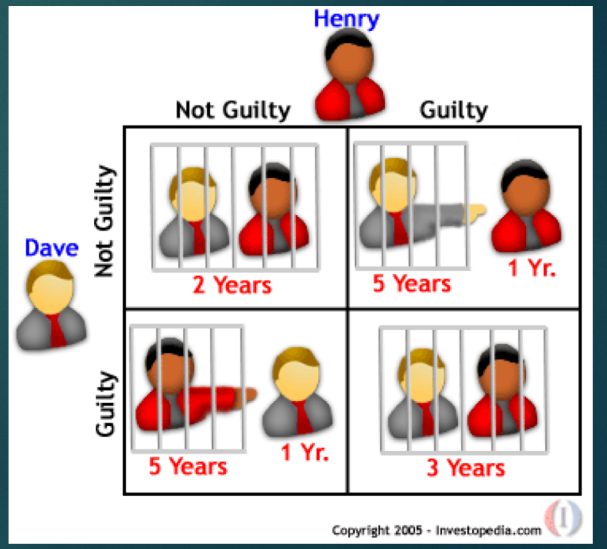


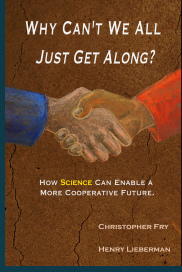


The Central Argument (2 of 7)

Many social situations can be described by the *Prisoner's Dilemma*.

It seems like you should *compete*…
… but actually, you should *cooperate*





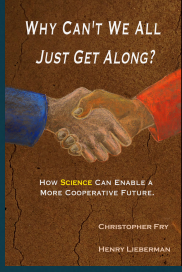
The Central Argument (3 of 7)

Scarcity promotes competition

Abundance promotes cooperation

(and vice versa)

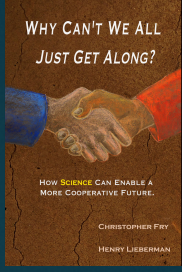
Temptation
Reward
Punishment
Sucker's Loss



The Central Argument (4 of 7)

Artificial Intelligence
and *Personal Manufacturing*

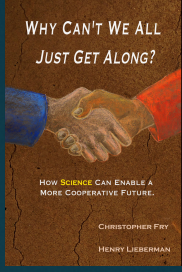
can solve scarcity



The Central Argument (5 of 7)

Our political & economic systems were developed for competitive scarcity.

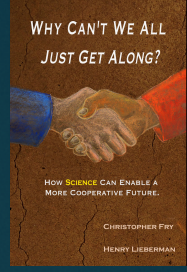
They must change for the new era of cooperation and abundance!



The Central Argument (6 of 7)

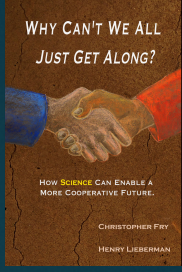
What replaces *Capitalism/Communism*?

Makerism
(democratize the means of production)



Makerism

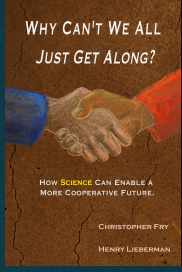
- Capitalism: *Capital* owns the means of production
- Communism: *Government* owns the means of production
- Makerism: *Everybody* owns the means of production
  - The means of production are:
    - 3D Printers and Robots, not big factories
      - Key advance: When a 3D printer can make another 3D printer
    - AI Software, not bureaucracies and bureaucrats



The Central Argument (7 of 7)

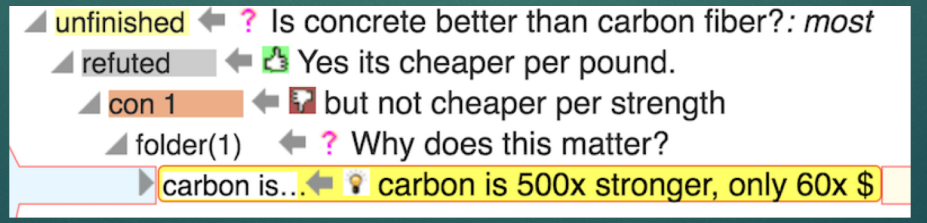
What replaces *US "Democracy"*?

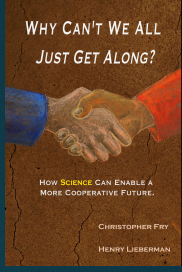
Reasonocracy
(cooperation inspired by the social processes of science)



Reasonocracy

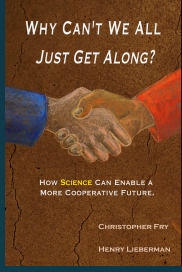
- Government inspired by the social principles of the scientific community
- Science is organized for cooperation
  - No President, No CEO
  - No stockholders, no political parties, etc. etc.
  - Very little voting
- Modern processes and tools for achieving consensus





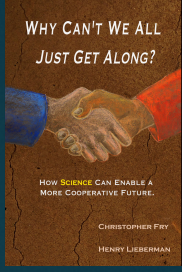
History of the world, log scale

Time	**-100K years**
Era	Hunter-Gatherer
Tech	Stones & Bones
Economy + Government	Tribalism
Interpersonal	Competition
Result	Blood



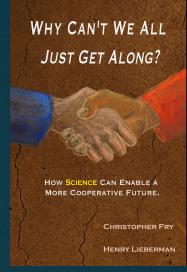
History of the world, log scale

Time	-100K years	-10K years
Era	Hunter-Gatherer	Agricultural
Tech	Stones & Bones	Plows & Cows
Economy + Government	Tribalism	Feudalism
Interpersonal	Competition	Competition
Result	Blood	Sweat



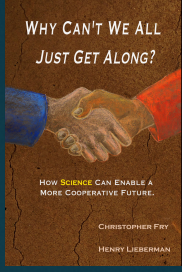
History of the world, log scale

Time	-100K years	-10K years	-100 years to Now
Era	Hunter-Gatherer	Agricultural	Industrial
Tech	Stones & Bones	Plows & Cows	Jobs & Mobs
Economy + Government	Tribalism	Feudalism	Capitalism + Democracy
Interpersonal	Competition	Competition	Competition
Result	Blood	Sweat	Tears



History of the world, log scale

Time	-100K years	-10K years	-100 years to Now	+10 to +100 years
Era	Hunter-Gatherer	Agricultural	Industrial	Information Age
Tech	Stones & Bones	Plows & Cows	Jobs & Mobs	Machines & Genes (AI & Robots & 3DP & Biotech)
Economy + Government	Tribalism	Feudalism	Capitalism + Democracy	Makerism + Reasonocracy
Interpersonal	Competition	Competition	Competition	Cooperation
Result	Blood	Sweat	Tears	Peace, Prosperity



Now what should we do?

- Communicate an optimistic vision for the future
- Help people to understand that we're in a transitional society
- Help design the new society
- Help design the transition so that nobody gets hurt

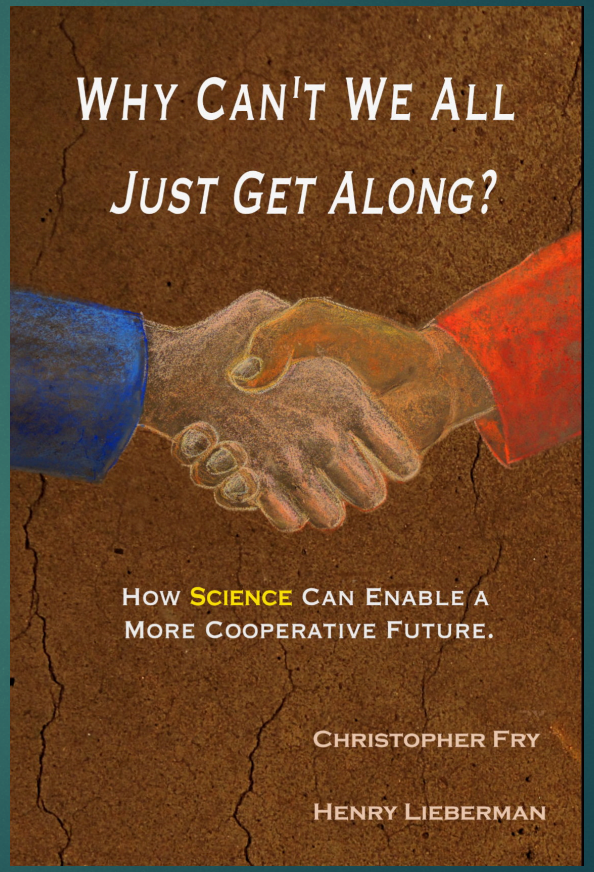
- … and we'll all live happily ever after!

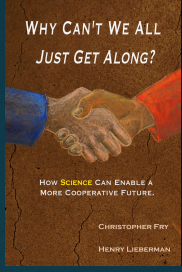
The full story with five part harmony and TEDx talk

- http://www.whycantwe.org

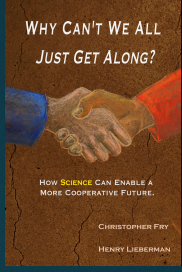
- Book (e-book and hardcopy)
- TEDx talk (12 minutes), essays

- You are invited to our MIT course!
  - RSVP: lieber@media.mit.edu
  - Mon and Wed, 17 Feb 21 to 19 May 21
  - 13:00-14:30 US EDT = 18:00-19:30 UTC



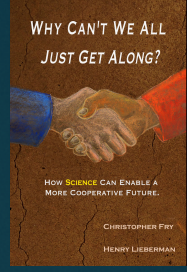


Course requirements



- Final project
  - Paper and/or programming project
- Class assignments weekly
- Participation in class and online discussion
- Grades only for MIT partcipants

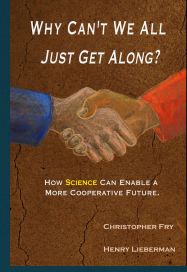
Please send to lieber@media.mit.edu



- Your name
- Your email
- Your location (city, country)
- Your birthdate (to set up an MIT guest account)
- Your affiliation (school, company, organization, or independent)

- Whatever you would like to share about
  - Why you're interested in the course
  - A bit about your background and interests

Mailing Lists



- Two mailing lists for this course:
  - scicoop-spring-21@mit.edu:
    - All participants plus instructors
    - **Everyone may post** -- we encourage general questions / class-wide discussion!
  - scicoop-spring-21-staff@mit.edu:
    - Just goes to course staff (Instructors - Henry + Fry / TA's)
    - Submit homework here (for now)
    - Ask private questions to the instructors