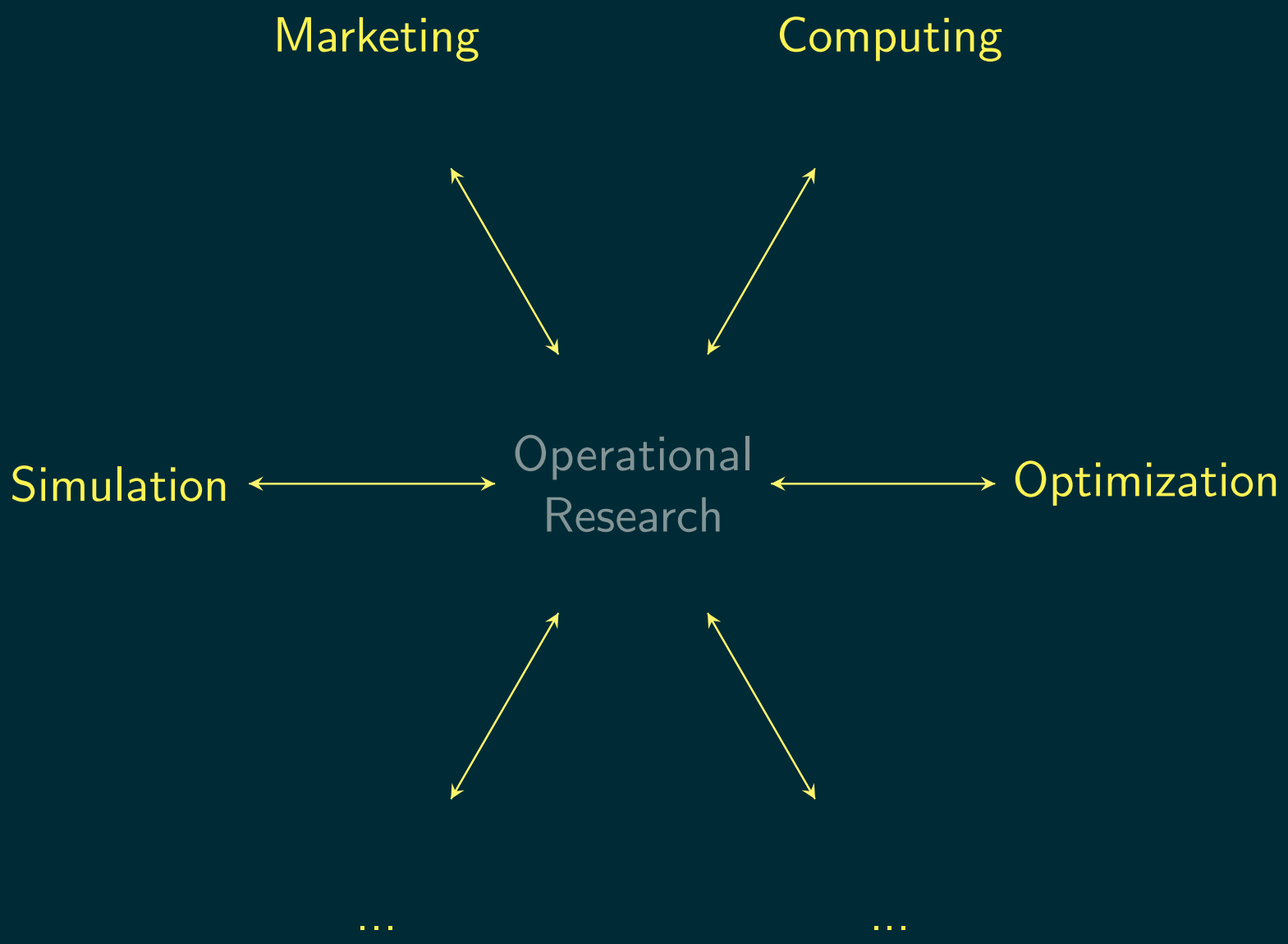
Defection and Cooperation amongst Prisoners

@NikoletaGlyn


Maths
Operational Research
Game Theory
Iterated Prisoner's Dilemma

Operational Research

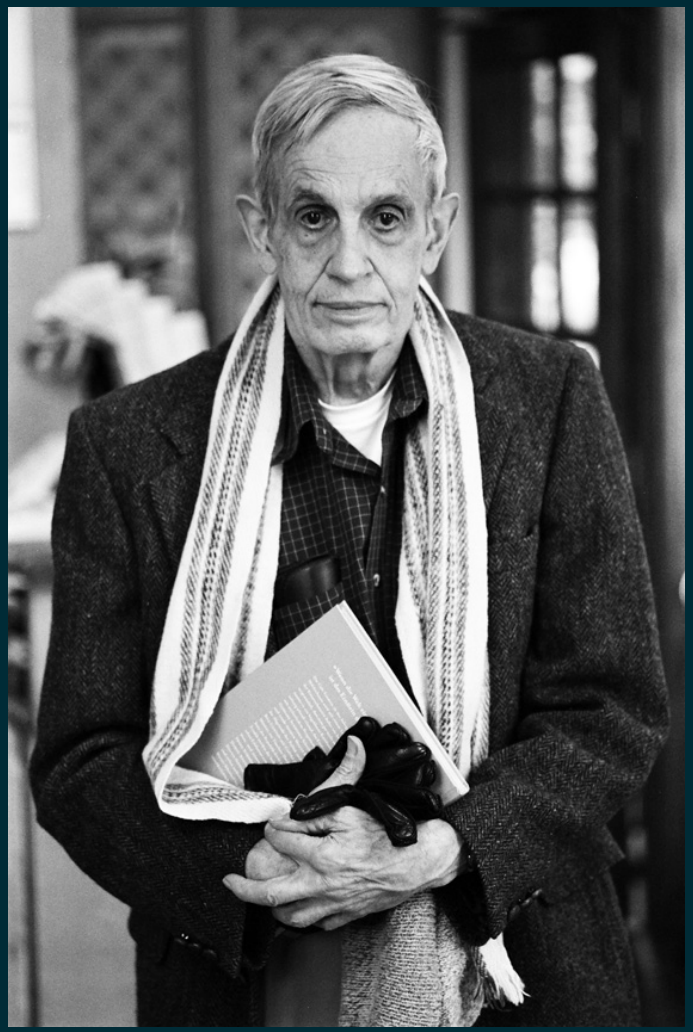

Marketing
Computing
Simulation
Operational
Research
Optimization
...
...

Game Theory

Traveller's Dilemma

$$\begin{bmatrix} (2,2) & (4,0) & (4,0) \\ (0,4) & (3,3) & (5,1) \\ (0,4) & (1,5) & (4,4) \end{bmatrix}$$


HE SAW THE
WORLD IN A WAY
NO ONE COULD HAVE
IMAGINED.
RUSSELL
CROWE
A BEAUTIFUL
MIND
ED HARRIS



$$\begin{bmatrix} (2,2) & (4,0) & (4,0) \\ (0,4) & (3,3) & (5,1) \\ (0,4) & (1,5) & (4,4) \end{bmatrix}$$

The Prisoner's Dilemma

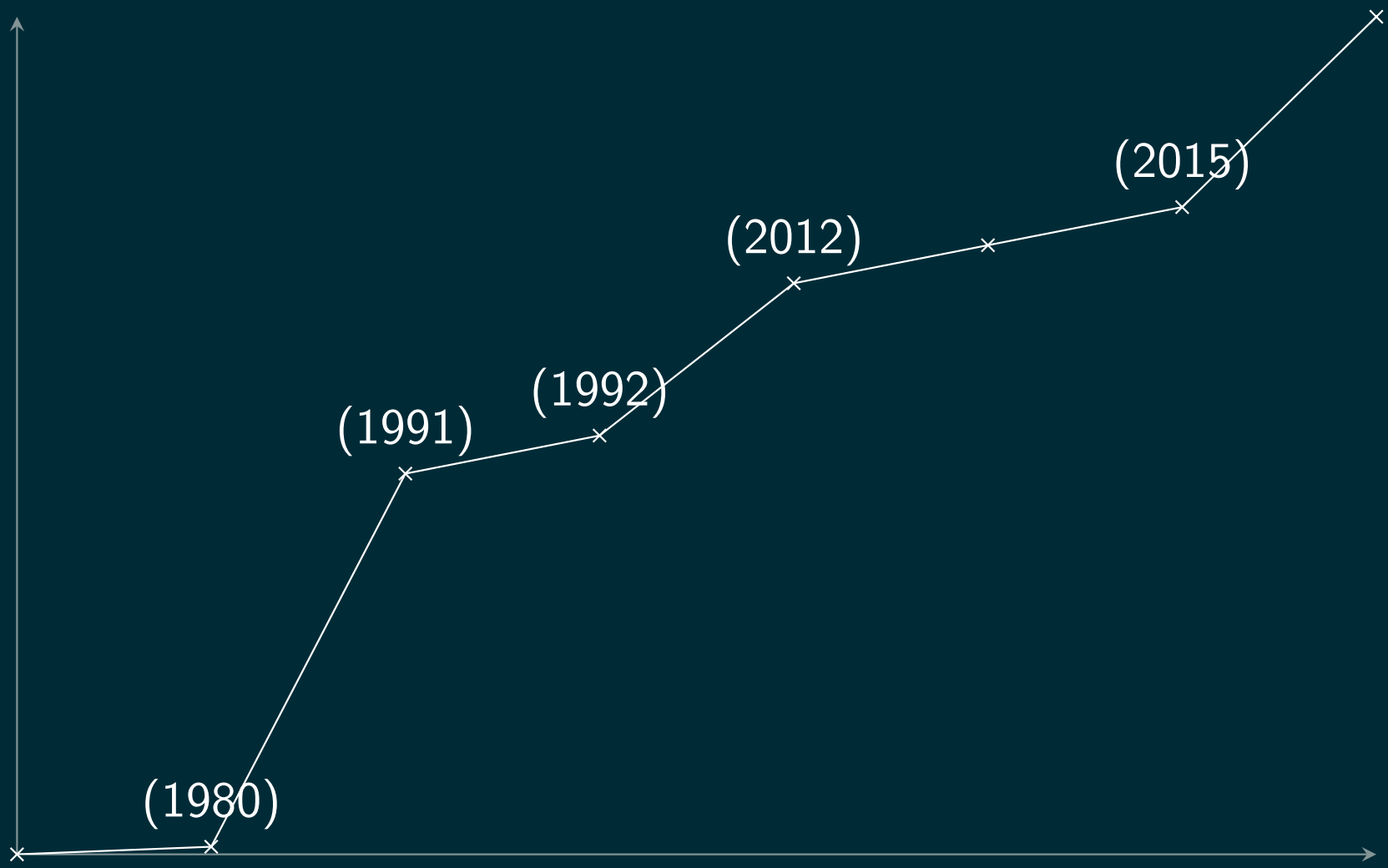
$$\begin{bmatrix} (3,3) & (0,5) \\ (5,0) & (1,1) \end{bmatrix}$$

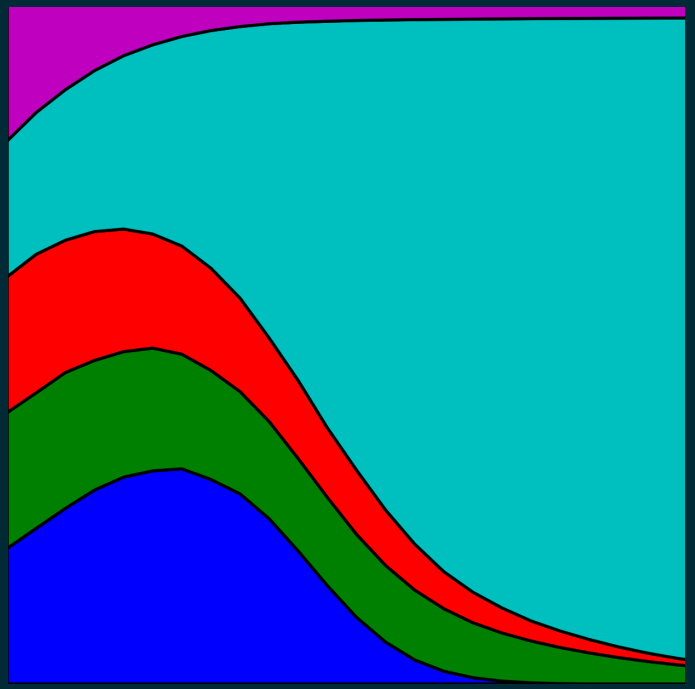
Robert Axelrod

1980a: 14+1 strategies

1980b: 64+1 strategies

```
class TitForTat(Player):
    """
    A player starts by cooperating and then mimics the previous action of
    the opponent.

    Note that the code for this strategy is written in a fairly verbose
    way. This is done so that it can serve as an example strategy for
    those who might be new to Python.

    Names:

    - Rapoport's strategy: [Axelrod1980]_
    - TitForTat: [Axelrod1980]_
    """

    def strategy(self, opponent):
        """This is the actual strategy"""
        # First move
        if not self.history:
            return C
        # React to the opponent's last move
        if opponent.history[-1] == D:
            return D
        return C
```


(1980)
(1991)
(1992)
(2012)
(2015)



Meta study of tournaments
Machine learning strategies
Evolution

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https://github.com/Nikoleta-v3
https://github.com/Axelrod-Python/Axelrod