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**From:** Joscha Bach [REDACTED]  
**Sent:** Wednesday, August 24, 2016 5:11 PM  
**To:** Jeffrey Epstein  
**Subject:** Re:

By guessing. It seems to be a general learning problem to me; we assume an initial causal model and update approximating a Bayesian model based on observation.

For instance, if I want to find out if my opponent is going to defect, I can make a model of my opponent, where I weight the influence of

- their expected current and future interaction reward with me
- their general principled inertia (people tend to behave consistently, partially because it makes them generally predictable, and partially because they don't want to consider everything from first principles)
- how much they see me as an end-goal (like a parent sees their children, or a teacher their pupils)
- how much reputation gain they expect from actual and imagined 3rd party observation
- how much "virtual" reputation gain/loss they get from defecting from their own values.

If one wanted to make a PED style model of this, it is probably too complex and perhaps it makes sense to simplify it to a single reputation actor. But I guess that in actual interactions, this is what we implicitly consider.

> On Aug 24, 2016, at 12:58, jeffrey E. <jeevacation@gmail.com> wrote:

>  
> so how does one determine the matrix without knowing the internal state of the player.

>  
> On Wed, Aug 24, 2016 at 12:57 PM, Joscha Bach [REDACTED] wrote:

> If the hypothetical observer is expected to dole out rewards/punishments as result of the player's actions, the player will add the expected rewards to the payoff.

> Reputation can be translated into expectation of future reward, based on a cooperation/defection function of other players.

>  
>> On Aug 24, 2016, at 12:52, jeffrey E. <jeevacation@gmail.com> wrote:

>>  
>> in a two player game what if one player BELIVES there is an observer but there is not. the payoff matrix should change. ?

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