Executing Free-rides and Finding Rational Choice

An investigation of the occurrence of these phenomenons in a simulation game

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INTRODUCTION

To fully grasp, understand and most importantly: analyze the actions of the participants in the game at hand it is absolutely instrumental to have a firm understanding of the essential dynamics that take place when rational people execute rational decisions. In the following chapter I will try to portray and introduce these aforementioned dynamics with the help of Michael John Lavers book *Private Desire, Political Action: An Invitation to the Politics of Rational Choice,* which offers a general insight into the origins of individuals trying to make the right, as in the most effective, choice. It is important to bear in mind that these models of rational choice making expect people to generate the specific choice, which grants themselves the best outcome or the most net gain. Without wanting to delve into sociological concepts too deep, it are civilizational concepts like empathy and compassion that can (rightfully) keep individuals away from decisions that would let them benefit, but at the severe cost of bigger harm to the community.

THEORY

The basics of the concept of rational choice can be put very simple: There is a sphere, in which a multitude of people exist. These people have different objects of desire. They happen to not only desire one object, but it is more accurate to expect them to possess whole sets of desires, so a combination of different objectives. These objectives by no means have necessarily to be of materialistic nature, it can also be eventual goals of spiritual or emotional value. It basically describes the totality of the things, thoughts or emotions the individual desires. Now - this may seem obvious - these people are motivated to fulfil these desires, which makes them rationally operating human beings. In order to pursue their desires, the individuals have to expend resources, "[b]ut each individual is vested by nature with a limited stock of resourced denominated, in their most basic form, in terms of physical and mental capacities such as strength, energy, endurance, determination, ingenuity and intelligence."[1]

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1   Laver 1997, p. 18.

Rational choice

For this reason, the desires possessed by individuals can be divided into different categories. Some of them may potentially be realised by the expenditure of a certain amount of one individual´s personal resources, some others might only be possible to achieve if a group of people act upon reaching the (potentially shared) desires together and some of them might just not be possible to achieve at all. The fact that people have a limited amount of resources to reach their desires leads to a very pivotal insight: Not all possessed desires can be fulfilled, especially because some might use up a vast amount of time and energy (resources) at hand. This predicament is the absolute route of why it is necessary to make choices. Only after choosing which desire to pursue, it is possible to design a strategy, consistent of basic or more complex actions, to effectively work towards the fulfilments of the desires.

Therefore, to make a rational choice, means to, at least in the first step of the process, place one's (referred to as person X in the following) desires in an order of preference. Only after X has attributed hierarchical values to their different desires, the rational decision-making process can be initiated. In the next step, it is mandatory for X to not only rank the desires in order of preference, but to determine how *much* more or less important they are in relative comparison with each other. In other words: "She [person X] needs […] to assign *values* to her various goals before she can engage in an effective rational calculus."[2] After X has placed their desires in an order of relative importance, X has to calculate the effectiveness of the possible actions at hand, which yield positive effects on fulfilling their personal desires. This step requires X to estimate how high the probability of any course of actions is to accomplish (or at least help to fulfil) the desires at stake. This ultimately leads X to ascertaining and attributing two factors: The first one for the relative importance (value) of the desire and the second one for the likeliness of the various possible routes of action to actually successfully fulfil the desire. Only after generating both factors as precisely as possible, X can ensue with the final step of computing their own right (as in rational) choice, by combining the value of each possible outcome with their attributed likeliness of it being successful. This demands each individual, which is operating on a rational level, to entertain a multitude of rather

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2   Laver 1997, p. 21.

complex cognitive calculations. Most of these are not even apparent to our full consciousness, but they are being produced (at least to some extend) all the time.

After establishing this basic concept of X reaching a rational decision in regard to X`s own and personal desires it becomes quite clear that in a world populated by billions of people and therefore as many different sets of desires, there is a considerable amount of desires, which are in stark competition with the ones of other individuals due to the limited resources available. A purely rational choice oriented process cannot take the other people's preferences in consideration, since it clearly focuses on the self-maximization of reaching one's own intrinsic needs. Therefore, people will find themselves in a sphere of everlasting competition with each other over the individual fulfilment of their personal desires and the possession of financial, political, societal and environmental resources.

Free Riding and Collective Action Problem

There are two different fundamental categories of desires (or goods[3]), which can and will be desired by individuals: Private and public consumption goods. A private consumption good only benefits the individual consuming it, Laver chooses to establish eating a banana as a respective example in his book, as the banana diminishes the hunger of the consumer but does not give the people surrounding him or her any benefits at all. A public consumption good on the other hand establishes a benefit for large parts or the entire society. For example, an imaginary cure for cancer would do so because it quite clearly wouldn't only benefit those suffering from cancer, but also those people who know someone doing so or even to a more extreme extend every person alive, because each person alive is potentially in danger of maybe becoming cancer at a later stage and might be even hurting in the present age due to the fear of suffering from it later in life.

In order to fully understand the dynamics of free riding (and therefore collective action problems) it is instrumental to take a closer look at the production of public consumption goods. In almost all cases, the production of the public consumption good can only be

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3 „I shall in what follows often refer to objects of desire as "goods". In doing this I am thinking of goods in a very general way, to comprise not only the goods and services that economists and shopkeepers like so much to talk about, but also anything else that might be an object of desire." (Laver 1997, p. 29)

established by a concerted group effort. This is also due to the fact that no person has the incentive to focus all their resources to come close to the possibility of fulfilling the desire. Most of the time, people allocate a part of their resources, in our society mainly time and/or money, to help with the creation of the public good, which large or all parts of society would benefit from.

This scenario though leads to one intriguing option for each rationally operating individual desiring this public consumption good: The person could simply stop allocating any of their resources towards the production of said good and due to their relatively small role in contributing to its production still benefit from the good created by the majority of the society in the same way as before. The person could therefore take so-called free rides on the willingness of the majority of the societal members to contribute resources towards the production of the good. In other words, some individuals could simply opt out of the production process and still benefit from the good in the same way. While this - in theory - is a perfectly rational decision to make, it perfectly demonstrates the egocentric nature of the very absolute basics of rational decision-making, due to the simple fact that if all people were to act like this, the product would cease to exist, which would be to absolutely no one's interest or benefit.

The collective action problem shines light to this exact free-riding induced scenario from a different angle. When a public consumption good has to be produced, it takes the allocation of resources from a rather large[4] group to ultimately make it come to existence. While a large majority of the beneficiaries of the good have to pay to gather enough resources to produce the good, all members of the group of potential beneficiaries would still be better off at the end of the day to not contribute whilst hoping that the rest of the group members fulfil their societal duty by contributing their relative parts of resources. Therefore, the potential of creating a free-riding situation for each individual dominates the process of publicly producing a good and ultimately is the genesis of the collective action problem.

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4 The size of the group depends on the amount of resources each member is willing to pay as well as the total amount of resources necessary to produce the public good.

RESEARCH DESIGN

Free Riding, the Game

The second game we played under the supervision of Peggy Terletzki during the seminar and on which I intend to focus my analysis mainly due to my role of an observer during the game, was explicitly designed to emphasize the aforementioned phenomenon of free-riding and collective action problematics in a real-life scenario. As stated in the introduction of the rule book to the game, "[f]ree riding [referring to the name of the game] is about how to pay for public projects that everyone can enjoy whether or not they pay for them. The possibilities for anti-social and even worse behaviour are considerable."[5] To strengthen my focus on the following analysis furthermore, I will strictly focus on the second round of the free-riding game we played, as the set of rules of the game were established more firmly at this point, the participating players had stronger instincts and also more knowledge in form of experience on how to manipulate the other players into financially paying for their respective and hoped for free rides.

Rules

To begin with, there should ideally be seven parties (*tribes*) to participate in the game as active players. While we reached that number of participants in the second round of the game, three more people (including me) were observing the game and were basically not in the room, as we wouldn't interact with any of the players in any way. Then there was Peggy Terletzki as the dealer (*GOD*), who managed the coordination of the rounds and functioned as the bank by welcoming the roundly payments by the players and paying back potential earnings to the participants. The seven tribes randomly got assigned variating priorities among the four categories: defense, social welfare, public works and industrial development. While the actual content of the categories remains completely arbitrary, the four fields of public spending function as blank denominators to install different sets of desires in the seven parties assembled. Each of the seven players will end up with one field they feel most strongly about, while there is one other field they feel less strong but still relatively strong about, a third one they find mildly interesting and one last field that

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5   Games Reader, p. 25.

remains completely without any interest at all. To go along with that, each player receives 1000 dollars of cash to invest accordingly to their attributed fields, interests or desires.

Now, in a span of ten consecutive rounds, the dealer will randomly establish one of the four fields of funding in each round. The players then, in reaction to the field of funding at hand, decide upon how much of their budget they want to invest on the current field. If the accumulative investments by all seven players surpasses the 1000-dollar threshold, the field at hand gets funded and all seven players at the table receive payouts. If the field at hand was the pre-game, randomly assigned, primary interest category of a player, the respective player gets a 500-dollar payback. If the field at hand were the second-to-top category of interest, the payback would amount to 300 dollars and in the case of the third-to-top category of interest, the cash payed out would be 200 dollars. After the course of ten rounds, after ten fields of public funding were decided upon, there are two different ways to determine the actual winner of the game.

The very straightforward and somewhat in capitalist tradition determined winner would be the participant who manages to accumulate the highest cash payroll at the end of the ten rounds. A different, in respect to the name and the actual focus of the game more telling and interesting way to announce a winner, would be to determine which of the participants has gained the most money off free-riding in the rounds that happened to find public funding. This would necessitate to only analyze those rounds, which passed the 1000-dollar threshold and then look at those players who earned the most off of that whilst spending relatively small (or even no) amounts. While I will focus my analysis on the latter version, I will still try to extend my focus also on the more capitalist, straightforward motion of the game of who manages to stack up the most money.[6]

In general, the data I have gathered during the game is very susceptive for small mistakes, the margin of error in gathering the information seemed very low to me. By no means can I certainly guarantee the correctness of all of the digits I have assembled. I don't see this as a vast problematic, as I am more prominently trying to study what the numbers assembled can tell us about free-riding and just in general about rational choice, rather than to distinguish

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6   While there are obvious parallels between the two winners decided, they must not necessarily be the same person.

which of the participants has played the game the right or wrong way, whatever that may mean in this context.

Analysis

The graph below depicts the entire numeral data acquired from the second round of the free-riding game we played during the course of the seminar.

		Estelle	Sarah	Saleem	Yuki	Janek	Stefan	Nastia	total
1	DE	400	0	100	0	0	100	0	600
2	DE	0	0	50	0	300	100	0	450
3	DE	0	0	0	10	0	0	10	20
4	SW	300	0	50	0	0	120	300	770
5	ID	0	300	0	180	0	0	0	480
6	PW	0	30	400	150	100	400	400	1480
7	PW	0	50	300	190	0	280	200	1020
8	PW	0	50	200	300	100	300	200	1150
9	DE	0	10	100	0	250	0	200	660
10	SW	250	10	0	10	10	0	400	680
	spent	950	450	1200	840	760	1300	1710	
	earned	300	900	1500	1200	500	1500	900	
	free-riding	300	770	600	560	300	520	100	
	cash at end	350	1450	1300	1360	740	1200	190	

I want to start my analysis with a few very general observations, before I go on to interpret the data from a player-to-player standpoint and then end my analysis with summarizing thoughts.

To start with this as broadly as possible, it is not any surprise at all that out of the ten rounds, the three with public works were the only ones that were financed. Six of the seven players had public works either as their primary (three players) or secondary (three players) priority throughout the game. The graph below presents the different interests of public funding of the participating players.

	1st prio	2nd prio	3rd prio
Estelle	DE	SW	ID/PW
Sarah	ID	PW	DE
Saleem	PW	DE	SW
Yuki	ID / PW	SW	
Janek	DE	SW / ID / PW	
Stefan	PW	SW	ID
Nastia	SW	PW	DE

Defense was held as a first or second priority for only three of the seven players. The same is true for industry. Social works, however, was held as priority by five players, which seems very close to the number of players that had public works as their priority. A closer look at the weighting of the priorities though shows quite clearly that PW was of way greater accumulated importance than SW, as only one person (Nastia) had SW as their primary interest, while three players (Saleem, Yuki and Stefan) had their greatest urge to finance PW. Without taking away too much from the final analysis, all of these players finished the game with at least 200 (Stefan) and up to 360 (Yuki) dollars in total earnings throughout the game.

This simply shows that the *hand that you have been dealt* - in other words the fields that you possess the greatest interest in - matters decisively and is an absolutely key factor in determining the probability of success before the game. To make this clear: It doesn't matter which specific one of the fields you end up prioritizing, only the fact as many players as possible among your opponents end up with similar sets of interest is absolutely vital. The opportunity for free-riding adventures simply cannot occur at all if you are the only player among the participants with the respective field of interest. I will continue with this path of thought and enhance it with the ideas gathered in the following player-by-player analysis towards the end of my paper.

Estelle

To put it as frankly as possible: Estelle had close to no chance at all to be competitive in this game. First of all, she was the only attending player, who didn't have PW as one of their top priorities, which as a disadvantage is impossible to overstate, due to the simple fact that the three PW-funding rounds were the sole rounds that successfully ended up being funded. Her first priority (DE) appeared at an above average rate of four times during the ten rounds. This would have been a benefit if more people were interested in DE but in this manifestation of interests it actually ended up to be another substantial disadvantage because it absolutely put her in situations that asked her to make investments, which in reality really didn't have hardly a chance to come through at all. She enthusiastically and quite reasonably invested 400 dollars during the first round to have a high statistical chance of the project at hand ending up to be funded. At the end of round one she found out that she has invested twice as much as the rest of the participants combined. This information could have meant many different things to her, among which the most susceptible options in

my opinion would be: Either nobody else is interested in DE, or the other players are trying way too urgently (only in her rationally operating eyes) to take free-rides. Obviously, the data cannot reveal her explicit thoughts, but the fact that she didn't even decide to spend a single dollar during the following three rounds of potential DE-funding strongly hints toward the narrative that she gave up to earn any money in this field after the first round. Again, from a rational standpoint her maneuvering makes complete sense.

Sarah

Sarah chose to play this game in a very moderate way. The only time her primary priority (ID in round 5) popped up, she was willing to (unsuccessfully) spend 300 dollars. This is twice as much as she ended up spending in the other nine rounds of the game combined, which makes her by far (more than 300 dollars) the person spending the least over the span of ten rounds. During the ominous rounds six to eight - which were the three PW-rounds and the only rounds that ended up to be funded - she only spent 130 dollars in total (average per round: 43,3), making her the undisputable free-riding champion of the game. Her success in free-riding could either be viewed as especially impressive because she managed to make more money off of it than her opponents who had PW as their primary objective or on the other hand be seen as a somewhat lucky consequence of having PW as a second priority, which put her in a spot where she was more willing to force her luck, which was definitely helping her in the way that she couldn't know that PW was the clear crowd favorite field of interest. I happen to think that she was put into a great spot by randomness but managed to make the most out of it due to her willingness to take reasonable risks and her overall observation that being stubborn on contributing close to nothing financially seemed to pay out in the end.

Saleem and Stefan

I will go out of order a bit here and analyze two players simultaneously because Saleem's and Stefan's preferences as well as their overall tactical approaches were highly similar and therefore it would seem somewhat redundant to analyze them apart from each other. Both were one of the three lucky players to be in the position to have PW as their primary field of interest. They were actually the two only players who had PW as their single field of interest, which lead to them being the two only players who got payed out the maximum of 1500

dollars throughout the ten rounds. They both decided to approach a crucially more aggressive strategy of investments than Sarah, as they spent 750 (Saleem) and 850 (Stefan) additional dollars in comparison to Sarah. They gained similar amounts due to free-riding (Stefan: 520 and Saleem: 600), spent similar amounts throughout the game (Stefan: 1300, Saleem: 1200) and ended up as number three and four on the list of the richest players at the end of the game. This is a bit surprising because they were the two players - at least at first glance - which technically were dealt the best hands throughout the game, as they were the only players who had PW as a singular primary category and PW ended up to be the only funded area.

This, in a very direct manner, proves the modest investment strategy of Sarah to be - at least throughout this manifestation of the game - the more effective overall strategy: Among the four players (Sarah, Saleem, Yuki and Stefan) which ended up making money (instead of losing some) throughout the course of the game, Saleem and Stefan from a very technical standpoint were dealt the two best hands and ended up as the two worst-earning players of these four profiteers. If Stefan and Saleem were operating aggressively because they decided to play in this style before the game started or if they simply - somewhat without their own doing - were eased into this mode by the three consecutive rounds six to eight can't be extrapolated from the data at hand. They both bid 400 dollars in the first round their number one priority came up for the first time (PW in round 6), which is two of the four[7] only circumstances in which any of the players dared to fund this high of an amount. They - with reasonable hesitancy - lowered their bids (by relatively small amounts) in each of the two consecutive rounds. So, while being fairly aggressive on general terms by bidding an overall very high amount of money throughout the ten rounds, on a round-to-round level of looking at things both players didn't dare to *lower* their bids as aggressive as other competitors, as they were - rightfully so, as round number 7 with an overall amount of 1020 dollars shows - afraid of the community failing to pass the accumulative threshold of 1000 dollars. In other words, both operated as aggressive bidders and non-aggressive free-riders.

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7   I am ignoring Nastia´s 400-dollar bid in round 6 for reasons that I will state later

Yuki

Yuki´s case is a very interesting one to me, for the following reasons. First of all, for her, PW was somewhat of the 1,5th priority, as she had two primary priorities (PW and ID), which led to her earning 400 if one of those were funded by the group. To add to her interesting profile, she made a very small bet of 10 dollars in the 3rd round (DE), with only one other player (Nastia) pouring in another ten dollars. While this is such a minimal loss (1% of her starting budget) that it would hardly change the outcome of the entire game, one could argue that this was an interesting idea to scrutinize the other positions at the table, although it would be very difficult to understand how much and by which players the money would have been contributed if more players would have been willing to contribute – nevertheless an interesting move due to the minimal loss. Furthermore, she approached a similar attempt in the tenth and last round (SW), where she also spent ten dollars on her second-to-last priority.

Another somewhat surprising tactic was the way she continually increased her bids during the three rounds (6-8) that ended up to be funded, as all other players at the table (except Sarah, who went with minimal raises from 30 to 50 to 50 dollars in the three rounds) decisively decreased their willingness to pay. While this course of action may seem somewhat counter-intuitive as her per-round free-riding gain diminished from round to round, round 7 would not have been funded at all if not for her unusual 40-dollar increase from a 150- to a 190-dollar bid. To round it up, she played a very balanced and not altogether that daring style but included a series of unusual (but seemingly efficient) maneuvers like those described above.

Janek

Janek was dealt a (mathematically) highly improbable starting position, as he had to care about all public funding fields due to the fact that SW, ID and PW were all his second priority. This put him in the somewhat weird position that he could and would earn off of every field that would end up to be funded, but in the most cases (3 out of 4) not very much. To be specific: 166 dollars. I would argue, with this position in mind, it would have been a promising approach to be the most daring free-rider out of everyone and never contribute a single dollar, just to maximize the winning margin whilst maintaining a relatively high

likelihood that at some point during the ten rounds he would cash out. Of course, this is very easily said in hindsight and absolutely remains in the realms of speculation.

In the four rounds of which his own priority (DE) was at stake, he chose a very binary strategy-path, which makes sense to me: He either invested a substantial amount (300 in round 2 and 250 in round 9) or nothing at all (0 in round 1 and 0 in round 3). As already thematized in Estelle´s analysis, having DE as a priority wasn't a very promising position to begin with during this game, so his position - as well as Estelle´s - was not good at all.

Nastia

Nastia had one very big disadvantage compared with the other players at the table - she did not participate in the first manifestation of the game we played the day before. She had to start to play the game with no experience at all being surrounded with contestants that had at least gained some knowledge the day before and also had the chance to read literature on coming to rational, or in this case mathematical decisions. She earned a respectable 900 dollars - as so many other players did - in the rounds 6 to 8 but did that by spending 800 dollars during those rounds, which left her with a free-riding net advantage of 100 dollars, which was by far the smallest free-riding gain among the participants. In round six she spent 400 dollars with the chance to earn 300, which is simply an irrational decision and without any questions due to her being new to the game. She did rectify the amount in the following two rounds by chipping in 200 dollars and putting herself in a position to earn back some money. In general, as hinted at before, I will not put too much meaning in the results by Nastia, as she did not have the chance to gain routine playing the game the day before.

GENERAL ANALYSIS AND CONCLUSION

I will try to string some of the aforementioned thoughts together into more general insights I have gained throughout analyzing the data. Again, the thoughts I will share are in no way criticism on the maneuvering by the players at the table, as they obviously couldn't know what any of the other players were dealt as hands and therefore were thinking. My first insight is both an observation and a disclaimer: The sample size upon which I generate my

analysis is very small. Almost to a point were its irresponsible to even try to extrapolate overarching thoughts out of it. This small sample size leads to luck being the most deciding factor in the game and therefore makes it very difficult not only to analyze *who* was playing the game the right (rational) way, but way more importantly: To gain knowledge about *how* to play the game the right (rational) way.

Nevertheless, I will try to very subtly mention a few narratives that seem to me as if they might hold true also with a bigger sample size. First of all, the field of interest you were dealt in the beginning of the game decided upon you having an actual chance of winning the game. Only if you had PW as a top or second-to-top priority you were put in a position to compete. While this is only true because PW is the field of interest a majority (5/7 players) at the table is interested in, it still meant for a minority (Estelle and Janek) they had close to no chance to win the game. Another general insight is that at least in this manifestation of the game, it was the most promising strategy to conservatively spend rather small amounts, or in other words to aggressively pursue free rides and increase the chances of collective action scenarios to occur.

A revolving theme, which leads me to my last general insight, is the incredible dependency, whatever your actions may be, on the path of actions the other participants decide to ensue. Therefore, the game to me seems to be more about trying to collect knowledge about what the other players are intending to do than to constantly trying to optimize your own bidding, because there simply is only a maximum amount of 499 dollars you can spend while still making profit. Due to the fact that the profit would amount to one dollar in that scenario, I feel like - and the data shows that the players agree with me - 400 dollars is the absolutely maximum investment feasible. Though it being feasible doesn't necessarily make it a good idea: 400 dollars are 40% of your starting budget, which you put on the line without any certainty for the chance to earn 100 dollars, which amount to 10% of your starting budget. While in a nutshell this seems like a very venturesome and almost irresponsible business idea, it simply cannot be looked at it this way because that would lead to all players not spending anything at all. Which brings me back to my aforementioned point that the dependency on what the other players at the table do is incredibly high and the reason for your success or failure.

"[W]e come across many, many examples of goods that require some, but not total co-operation between group members if they are to be produced, and which people can enjoy whether or not they have contributed to the costs of production."[8]

I think the free-riding game was very effective in proving this to be very true. Although I think the game was even more effective to shine light on the problematics of collective action, as the manifestation of the rules kind of asked to act collectively, which then some participants could manipulate by not taking action and thereby taking free rides. I will try to end this essay as simple as possible: Sarah won because Saleem and Stefan were putting her in a situation to win.

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[8]   Laver 1997, p. 39.

Literature

Laver, Michael John (1997): Private Desire, Political Action: An Invitation to the Politics of Rational Choice. Sage Publications Ltd.: London.