

*Rolling Stock*  
Player's Guide

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# Chapter 1

## A word about playing time

*Rolling Stock* is essentially a short game. If you have already tried the so-called “short game” (or even the “full game”), you might laugh at me now. Your game probably took the better part of your day.

So why do I believe *Rolling Stock* is essentially a short game?

First, the number of turns is relatively low if you play with experienced players. (It’s an interesting aspect of the game that less efficient strategies increase the total number of turns in the game, to be discussed below.) A *full game* at the usual pace will rarely take more than 15 turns. If enough players opt for an “overdrive” strategy, you might be done in 12 turns.

Second, not so much is happening in a single turn. Let’s analyze a bit: Phases 4, 5, 8, and 10 are completely deterministic. You just execute them. The more experienced you are, the faster you will be done. Phase 8 (collecting income) involves the somewhat complicated step of calculating everybody’s income. If you have the discipline to track the income of your corporation on a sheet of paper, and if you do the math in advance before phase 8 even starts, you should still be very fast. And of course, it is all in parallel. With beginners, you probably want to double-check their income calculations, but once all players are experienced enough, you should be able to trust each other, and everybody just grabs the appropriate amounts of money from the bank. All these four phases (4, 5, 8, and 10) should be matter of seconds.

The other phases require some decisions by players. The decisions in phase 7 (closing companies) are sometimes not easy, but things only change fundamentally whenever the cost of ownership has changed. So phase 7 is probably difficult in only a couple of turns of a whole game. And again all players act in parallel. In most cases, your decision of closing a company does not depend on other players’ decisions. Phases 1 and 2 don’t have this advantage. They are strictly sequential, either in share price order (phase 1) or in face value order (phase 2). However, the decisions in these phases are usually relatively quick and easy. In phase 1 (issue shares), it’s strictly binary for each corporation: Issue a share or not? You have to ask each corporation each time, but with reasonably disciplined players, it should be a very fast sweep through all

the corporations. Phase 2 (going public) has an additional degree of freedom: the starting share price. On the other hand, only privately owned companies can go public, and in many turns, there are not a whole lot of them. Some players have the tendency to start lengthy negotiations in phase 2 to find out if they should go public with their company or if it is better to keep it private to sell it in phase 6 later in the same turn. While I do not intend to discourage negotiations in this phase, you should keep the time spent limited. See section 3.1 for an in-depth discussion of this issue.

Altogether, it is relatively easy and requires only a minimal amount of discipline to run through all the phases discussed so far quite quickly, taking only one or two minutes of the total time used for the whole turn. That leaves us with phases 3, 6, and 9. I sometimes call these three phases the soul of the game. Not only do they take longest to execute, but also the most crucial decisions tend to happen here. Let’s look at them in more detail.

Phase 9 is executed sequentially in share price order like phase 1. However, the decision of how much of a dividend to pay is often way more subtle and difficult, not only from a strategic point of view, but also the “technical” part of share price adjustment: Sometimes the range of allowed dividends includes all the possible new share prices, i.e. a \$0 dividend would result in a “double jump” up (last line of the share price card) while the maximum possible dividend would lead to a “double drop” (first line). Not only is the decision loaded, it also takes a while to do all the math to determine the “dividend bands” with their share price consequences. Again, tracking the book value (at least the less volatile non-cash part of it) on a sheet of paper and disciplined thinking ahead helps a lot. (Your decision might depend heavily on those of other corporations with a higher share price, but while thinking ahead, you can come up with a plan A and a plan B, and even a plan C if necessary. . . ) The good news: The more experienced players become, and the more consequently they follow particular strategic patterns, the more often they will lean towards “extreme” choices, i.e. either “no dividend at all” or “maximum possible dividend”. At that point, you don’t have to calculate any longer the exact amount of dividends you may pay while still increasing

your share price.

In phase 6 (corporations buy companies) players act in parallel again. That is very important as a lot of transactions might happen (and have to be negotiated before). If you have trouble keeping this phase short enough, you might want to use a sand timer and limit the duration of the whole phase to two minutes or even less. Once the time is up, transactions may not be performed any longer. Another possibility is a “soft constraint”: Let phase 6 run at will, but once you reach the point of fruitless lengthy negotiations, any player has the right to start a one-minute or 30-second sand-timer with the same effects as above.

Phase 3 has a sequential nature, but since everybody only performs exactly one action when it’s their turn, the downtime tends to be very short. Thinking ahead and acting fast is the key, as usual. Sometimes you might be required to pass because there is no other action legally possible. Sometimes you will “obviously” pass because any action legally possible would make no sense. However, these circumstances might not be so obvious to everybody else. Just say “pass” quickly whenever you are up to perform an action, and don’t take for granted that the others will guess your intentions. In many turns, phase 3 will actually be very short and almost trivial. Other turns may see epic takeover battles and cunning (but lengthy) maneuvering. That’s part of the fun and is time well spent.

Overall, it doesn’t appear too difficult to run through a whole turn in less than 10 minutes. The aforementioned fast-paced full game of 12 turns would be done in 2 hours. But don’t feel ashamed now, thinking about your 6+ hour full game last weekend. In practice, it is very tough to get down to 10 minutes per turn (on average). Furthermore, the time needed per turn increases a bit with more players (as players cannot always act in parallel). You should aim for at most 12 minutes per turn in a three-player game, 15 minutes per turn in a four-player game, and 18 minutes per turn in a five player game (on average, there will always

be longer and shorter turns). Another thing is that inexperienced players will take more turns to finish the game. The less efficient you play, the less money you make, and the less money is available to buy new private companies. So companies are auctioned off more slowly, and it takes more turns to go through the whole deck. You will usually see a tendency to shorter games (in terms of number of turns needed) when players become more experienced. However, there are situations where it is actually part of a viable strategy to slow down the game. Structurally, the game rewards the players ahead in the tech race. So usually, everybody tries to run fast, outrun the others, but by doing so, they are speeding up the game as a whole, making it even more important to run even faster. But there are particular “meta-stable” situations where suddenly, enough players consciously slow down the game to have a significant effect on the total turn count.

The table below lists the typical number of turns and the typical playing time for the different variants, provided you do not exceed the time per turn above.

| game type | turns | 3p    | 4p    | 5p    |
|-----------|-------|-------|-------|-------|
| training  | 8–11  | 1h45m | 2h15m | 2h45m |
| short     | 10–14 | 2h30m | 3h00m | 3h30m |
| full      | 12–17 | 3h00m | 3h45m | 4h15m |

To summarize the key points for reasonably short games:

- Think ahead!
- Track income and book value of corporations with pen and paper.
- Parallelize wherever possible.
- Avoid excessively long negotiations (and read section 3.1 to decide which kind of deals and negotiations you want at all).

## Chapter 2

# Easily missed or misunderstood rules

Just a list of things beginners often get wrong, in approximate order of frequency, most common issues first.

- Synergies are only possible within a corporation. Companies owned directly by a player or by the foreign investor never ever receive synergy bonuses. When counting synergies, count every pair only once. If A synergizes with B, then B will always synergize with A, too. You still get the bonus only once.
- *Pass* and *leaving an auction* both happen during phase 3, but are entirely different things. *Pass* is an action you may take when it's your turn to perform one action. If you do that, you basically do nothing. If all players pass consecutively, phase 3 is over. But if any of the others take a non-pass action, you will have another turn, and when it's your turn again, you may (and must) choose a new action (which might be *pass* again, but any other legal action is eligible, too). In other words: Passing doesn't prevent you from taking another action later. In contrast, if you *leave an auction*, you have left the auction for good. You may not bid in the same auction ever again. Strictly speaking, *leaving an auction* is not an action at all. It happens as a sub-step during an auction, which is triggered by any player's *start an auction* action.
- After an auction, keep in mind that the last player that has performed an action is the player that has *started* the auction (*not* the player that has won the auction). So the next player performing an action will be the one next in player order to the player that has started the auction.
- Never transfer any assets (money, shares, companies) in a way not explicitly allowed by the rules. You can't sponsor your corporations, you can't "steal" from the treasury of your corporations, you can't give money or companies to other players, not even as a gift, etc. Keep all assets next to their respective owner (players, corporations, foreign investor, bank) and clearly separated from others.
- It is very tempting to think of the share price cards you see on the table as the price you have to pay to buy a share (or the price the bank will pay you if you sell a share). However, you have to pay the next higher available share price (and you will be paid the next lower available share price). You can see the next regular share prices in the corners of the share price cards, but remember that cards that are already in use are skipped, so the relevant price may be even higher (or lower, in case you sell).
- Newly drawn companies are not available for auction in the same turn. They have to wait until next turn. (Even the foreign investor cannot buy them in phase 5 of the same turn.)
- Never ever use any \$ or any company twice in phase 6. Don't forget to turn vertically the companies and the money used. Execute each transaction separately. Things like "The Bear buys MHE for \$8 from the Eagle, and at the same time the Eagle buys the BPM from the Bear for \$8, too, so we just swap companies and no money" just don't work. First transfer one of the companies (let's say the MHE) and pay the money (and turn both vertically), then do the same with the other company (the BPM), pay the money (which must not be the money turned vertically), and turn them both vertically.
- The cost of ownership is defined solely by the back of the top-most card in the deck of unrevealed company cards (or, if the deck has run out, by the game end card left behind). Once a company card has been drawn, it will never be flipped back again and its back is irrelevant for the rest of the game.
- While you can't sell the last player-owned share of a corporation, it is perfectly legal to sell the president's share if there is at least one other player owning a share of that corporation. (That player will become president after your sell action and will swap their own share with the president's share in the bank.)

## 2.1 Special notes for 18xx players

If you are an 18xx player, many concepts in *Rolling Stock* will be familiar to you. However, there are a number of significant differences, and you will have to “un-learn” certain things. The following list will help you to avoid the most common traps for 18xx players. (Non-18xx players can safely skip this section.)

- Players always start with \$30, no matter what the number of players is. (Basically, instead of decreasing the money of each player, the game size is increased to accommodate more players.)
- Pay special attention to phases 6 and 7, which are performed in “any order”. Don’t wait until it’s “your turn”. Just act.
- In phase 3 (you might want to call it “share round”), you indeed have exactly and only one action whenever it is your turn. *Either* buy *or* sell *or* start an auction *or* pass. And if you sell, it’s only ever *one* share per action.
- Otherwise, share trading has almost no restrictions compared to 18xx. There is no certificate limit. There is no limit of shares in the pool (except that at least *one* share of a corporation must be player-owned). There is no limit of shares an individual player may hold (may be 100 %). You may sell shares of a corporation that has just been founded. You may even buy shares you have sold before in the same phase. (Oh yes! But keep in mind the next item below. In other words: If you keep selling and buying the same share, you will lose money each time.)
- Every individual sell and buy action will modify the share price, and you will get/pay the *new* share price (see also the non-18xx-specific notes above).
- At the end of phase 3 (the “share round”), fully sold shares will *not* change their share price.
- There is no notion of a share being explicitly a “10 % share” or a “20 % share”. Keep in mind that shares not yet issued basically don’t exist. (After going public, the only way un-issued shares enter the game is by issuing shares in phase 1.) If a company has two shares issued, each is implicitly a 50 % share. If it has three shares issued, each is 33 %, and so on. Also note that the president’s share is a single share, not a double share.
- There is no “emergency money raising”. If your corporation has a negative net income and cannot pay for it, it goes bankrupt.
- You set a dividend per share and then pay it from treasury. The dividend you pay has no direct link to the income of your corporation in the same turn. Even if your corporation has a negative income, it may still pay dividends (if there is enough money left in the treasury). Furthermore, the share price adjustment is not directly coupled to the dividends you pay (despite this happening in the same phase 9). It is indirectly coupled (via the book value), but the effects are the opposite of what you would expect: In general, paying a dividend makes it more likely your share price will drop, while not paying a dividend (strictly speaking: paying a dividend of \$0) makes it more likely your share price will increase.
- In a certain way, the companies in *Rolling Stock* are a bit of both, privates and trains in 18xx. However, there is no upper limit of the number of subsidiary companies in a corporation (no “train limit”), and companies are never scrapped by force. (The latter is, however, not entirely alien to the 18xx world. *1873 Harzbahn* uses a very similar cost-of-ownership system.)
- Phase 4 (new player order) works exactly like in *1844: Switzerland*. If you know that game, nothing new here. Otherwise: It’s basically a refined priority deal.
- The bank has unlimited money.

## Chapter 3

# Variants

The following introduces several possible variants, in addition to the three game types (training, short, full) already featured in the standard rules.

### 3.1 Deals and negotiation

The rules are (intentionally) silent about deals and negotiations. Rules about deals and negotiations are a bit like rules about showing up on time to start the game or switching off your mobile phone while playing. Things are different for games with secret information, i.e. where some players have information others don't. In that case, you need rules about legal ways to share (or not to share) this information. But *Rolling Stock* has no secret information. Of course, the order and composition of the deck has a random component, but no player knows more than any other.

So by default, players can just say whatever they want. Nothing is forbidden, but nothing is enforced either. Feel free to forge deals and alliances, but remember that the rules won't help you to enforce those deals. (I believe it is basically impossible to write consistent rules that would make freeform deals binding. Deals are too often worded ambiguously, or they can't be fulfilled without breaking the rules, or a player has agreed to multiple deals that are mutually exclusive.) There is little danger that *Rolling Stock* would degenerate into a *Diplomacy*-style backstabbing game, simply because long-term deals are rare and the short-term deals neither require nor foster a long-term partnership (if at all, those will implicitly emerge from overarching strategic goals, e.g. a single player is running away with the game so that the other players cooperate with each other more intensely to catch up – perhaps they will even manage to implement an embargo against the leading player). In JC Lawrence's words: Both sellers and buyers (in phase 6) are “naturally promiscuous”.

Groups might have their own etiquette about deals and negotiations. Feel free to implement whatever you feel is right. However, I'd strongly discourage from secret negotiations. They would be a huge time drain, and I believe they are neither in the spirit of the game nor will players feel a great need for them.

In general, you should make sure that negotiations

don't stall the game for too long, see chapter 1. If you can't avoid spending an uncomfortable amount of time with negotiations and/or if you want to limit negotiations for other reasons, try one of the following more formalized variants:

- Strictly limit the time for the “any order” phases (e.g. two minutes for phase 6 and one minute for phase 7, feel free to use any value you see fit). In all “sequential” phases, players have to decide quickly and must not negotiate with other players when it's their turn to do something. At any other time, they may negotiate freely.
- Strictly limit negotiations to phase 6. (The more experienced players become, the more they will feel the need to plan in advance. The decision to issue a share in phase 1 or to form a corporation in phase 2 depends on future deals in phase 6. Players might be tempted to meticulously arrange all those deals for phase 6 as soon as in phase 1 or 2, which might stall the game quite seriously.)
- The most radical solution is a strict “no deals, no negotiations” policy. In phase 6, offers and counter-offers can still be made, but without additional table-talk. The following will still be OK: “Do you want to buy the MAD for \$50?” – “I'll give you \$45.” – “Let's say \$47.” – “Deal.” Not OK would be any additional arguments along the lines: “I can't give you more than \$45 because I still need these \$12 left to buy the PR from Chris's Horse corp. Furthermore, the \$45 are good enough for you because that will allow you to pay dividends and still rise in share price.” This radical variant is most suitable for “blitz” games. You might manage a full game in only two hours. But keep in mind that “Rolling Stock” is a very interactive game, and negotiations and deals are supposed to be part of the fun.

There is one specific type of situation where a certain type of players might create a sense of backstabbing.

*Example: Alice is the president of the “Android” corporation, which owns the WT and the OL. Bob is the president of the “Bear” corporation, which owns the MS and*

the BY. Alice and Bob agree that they should “swap” the OL and the BY to get better synergies. Since a direct swap is not possible, what formally has to happen is two transactions: (1) The “Bear” buys the OL from the “Android”. (2) The “Android” buys the BY from the “Bear”. Alice and Bob agree to do both transactions for the minimum possible price of \$7 (because both corporations are short of cash at the moment). The order of the transactions doesn’t really matter, but you have to start somewhere. So Alice’s “Android” hands over the OL to Bob’s “Bear”, and the “Bear” transfers \$7 to the “Android”. Alice wants to go on and to execute the second transaction, but in that moment, “all of a sudden”, Bob has second thoughts and refuses. Alice feels backstabbed. Bob’s behavior is completely legal, though. The rules don’t enforce any connection between transactions.

If this kind of situation appears to be a problem in your games, you might want to introduce a variant rule that allows “complex” transactions where a number of individual transactions can be executed in one step (so that the kind of “second thoughts” Bob had in the example are rendered impossible). But make sure that the “complex” transaction would still be legal if executed in a series of individual transactions. It is still impossible to “swap” companies if the corporations don’t have enough money to pay for their newly acquired companies, or if both corporations only own one company.

### 3.2 Secret private money

In the rules, all assets are open for inspection. Some players, however, prefer to play with secret private money. (The treasury of corporations has to be open because the book value has to be calculated in phase 9.) Feel free to do so as a variant, but keep in mind that the private money is perfectly trackable. If you allow players to take notes on paper (which is strongly encouraged to speed up the game, see chapter 1), then tracking the private money of each player becomes merely a matter of diligence, and most players will probably argue you should simply play with open money to spare everybody the tedious tracking work. If you disallow notes (or only allow specific kind of notes), tracking private money becomes a brain exercise, which only some players consider fun. Others simply won’t bother and leave it to their intuition, which will make auctions less predictable (“How much money will he have? How much do I have to bid to kick him out of the auction?”). Again, some players will consider that fun, others not. It’s your call.

### 3.3 Pre-selected companies

With a bit of bad luck, the deck in a three-player game might contain a subset of companies with very few synergies. While that’s an interesting challenge on its own, some players might not like it very much. Other players might dislike the random company selection in general.

Both problems can be solved by pre-selecting all or a part of the companies. All players should do that together and agree on the set of companies in play. Once the selection is done, perform the rest of the deck-building steps as usual (i.e. the companies are still face down and in random order).

A very simple tweak to guarantee a certain amount of synergy is to always have the most expensive company (i.e. the one with the most synergies) of each color in the deck. When creating the deck, first add the most expensive company of each color, then add more companies of the same color randomly until you reach the usual number. Shuffle in the usual way. Of all the variants in this chapter, this is in fact my personal favorite, and I recommend it whole-heartedly for three-player games. If you got fed up with games where the “synergy monsters” DR(29) or PR(19) were missing, try it.

If you wish to pre-select *all* companies, here are two very synergy rich scenarios for three players as suggestions:

- “Ports of the North”: BSE(2) AKE(6) BPM(7) MHE(8) – OL(14) SX(16) MS(17) PR(19) – DSB(20) NS(21) B(22) DR(29) – SJ(30) BR(33) BSR(40) E(43) – HA(47) HH(48) HR(49) LHR(54) – OPC(70) RCC(71) RU(85) AL(86)
- “Southern aeronauts”: BME(1) KME(5) BPM(7) MHE(8) – WT(11) BD(12) BY(13) HE(15) – SNCF(24) KK(25) SBB(26) DR(29) – BR(33) RENFE(32) FS(37) E(43) – MAD(45) CDG(56) FRA(58) FR(60) – MM(75) VP(80) LE(90) TSI(100)

### 3.4 Open companies

Some players dislike the unpredictability of the deck. To solve that, you can play with an open deck. Build the deck as usual, but then declare it open for inspection. To facilitate inspection, you can turn all company cards face-up. In that case, you should use one each of the unused green, blue, and purple company cards to mark the current cost of ownership. (Once the top-most card of the deck is green, place the unused green company card face-down next to the deck. Correspondingly, do the same once the top-most card is blue or purple.)

### 3.5 Pre-selected open companies

Obviously, you can combine the *pre-selected companies* variant with the *open companies* variant. You could even agree on a particular order of the pre-selected companies (e.g. in ascending face value order). In that way, you can eliminate all elements of chance from the game (except the initial random player order).



## 3.6 Share redemption

In this variant, corporations have a third option in phase 1. Instead of issuing a share or doing nothing, they can *redeem* one of their own shares from the bank. It basically works as if a player buys a share, only the buying entity is a corporation and the share ends up on the pile of unissued shares. Obviously, there must be at least one share of the redeeming corporation in the bank, and the redeeming corporation must have enough cash in treasury to pay for it. To avoid “one-share corporations”, a corporation must have at least three shares issued before redeeming a share.

There is one technicality, though: If a corporation has e.g. four shares issued, and it redeems a share, then the share ending up on top of the pile of unissued shares should be the one reading “4<sup>th</sup> share – 3 shares issued”. (In other words: Shares returning to the pile of unissued shares should preserve the order of the pile.) If that share is not in the bank but owned by a player, exchange that share with any share of the same corporation currently owned by the bank. Then redeem that share from the bank as usual.

This variant appears to increase the number of choices and therefore to make the game strategically richer. Be aware, however, that it might interfere with the subtle game balance in surprising ways. It might very well make certain strategies too easy so that the game degenerates strategically instead of becoming richer. I recommend this variant if you feel that corporations are not powerful enough. Should you reach the point where you think that corporations are *too* powerful with this variant, simply drop it again.

## 3.7 Two-player variant

To play with two players, set up the game as if you were playing with four players. Then, each player takes the position of two players in the four-player game simultaneously. Player A starts with his simulated “right hand” player in player order position 1. Player B starts with his simulated “left hand” player in position 2 and his simulated “right hand” player in position 3. Finally, player A starts with his simulated “left hand” player in position 4.

Play the game normally, as if it were a four-player game. To win, your *lower ranked* simulated player must be better than the lower ranked simulated player of your opponent.

*Example: Alice’s “right hand” player ends up first in the final ranking with a huge margin, and her “left hand” player ends up on a close last place. Bob’s simulated players end up on rank 2 and 3, very close to Alice’s “left hand” player. Bob wins the game because his lower ranked player is better than Alice’s lower ranked player.*

*Rolling Stock* is full of win-win deals. Forging those deal between opponents isn’t really interesting any longer

in a two-player game, because there is no third (or forth or fifth) party any longer relative to which the two dealing players would win. While deals between opposing players are in theory still possible in the two-player variant, they would only happen if the two players had a different understanding of the benefits of the deal and were both thinking they were winning more than the other. Deals between “allied” simulated players are obviously highly encouraged, and the two-player variant is very suited as an exercise for cooperative strategies. You even have to make sure that both simulated players benefit in a similar way because you can only win if you balance the result of your two simulated players. That’s very similar to a real four-player game. (Of course, you can “switch camps” at any time in a real four-player game and forge deals “promiscuously” with changing partners, while the two camps are fixed in the two-player variant.)

## 3.8 Epic six-player variant

If you are desperate to play with six players, and you have a lot of time, you may try the following epic six-player variant:

- During setup, use the foreign investor card as a proxy for the missing player order card number 6.
- Later in the game (when the foreign investor card is needed as such), use a card from a different game as a proxy for the number 6 player order card. Or simply don’t give the last player in player order a player order card at all.
- Each player receives only \$25 start money.
- Use *all* company cards of each color that is in use for the chosen game type (i.e. all 45 company cards if you play a full game).
- Otherwise, play the game following the usual rules. Note that the number of companies drawn from the deck is six.

Because of the smaller amount of money each player receives in the beginning, the game will have a slower start. The huge synergy potential will compensate for that later (if the players manage to realize that potential).

The number of active corporations will likely be higher, so the share price row will be more crowded. Also, you might easily run into the situation where a player wants to form a corporation but none is available (which is otherwise pretty rare, even in a five-player game).

In general, I’d recommend to play two three-player games in parallel if you have six players and two game sets available. But now and then, it might be fun to play the six-player variant, even if it takes significantly longer.



# Chapter 4

## Strategy

Compared to most other economic simulation games, the rules of *Rolling Stock* are ridiculously simple. Strategically, however, the game is extremely challenging and quite opaque, up to a point of utter frustration for beginners. This chapter gives you some strategic guidance, starting from the very basics all the way up to pretty advanced analyses. Hopefully, it will help you overcome the initial frustration, or prevent it altogether.

### 4.1 Basics

Let's start with a few basics to answer the questions you will probably run into first.

#### 4.1.1 Life-cycle of a company

A company is “born” in the offering, by drawing it from the deck (in phase 3 or during game setup). At the end of the following phase 5 (or even immediately if it is drawn during setup), it becomes available for auctions. Eventually, in a later turn, it is sold to a player in an auction (during phase 3), or the foreign investor buys it directly (during phase 5). A company could very well stay in the possession of a player or the foreign investor for the rest of its life (which may last until the game ends or may end early by closing the company in phase 7). If it ever changes hands again, it will happen in phase 6, and its next owner will be a corporation. From then on, it might be sold to other corporations, but it will always be owned by a corporation for the rest of its life.

As a player, you want to use this flow of companies to maximize your profit. We'll talk about the intricacies of share trading and managing corporations later. Let's focus on the “man in the middle” role of players first. It's obvious after reading the rules, and it sounds almost trivial, but the ability of players (and the foreign investor) to buy companies in auctions is the crucial magic power corporations are missing. All companies flow through the hands of players (or sometimes the foreign investor), and controlling this flow (what, when, and how fast) is the key to the game.

#### 4.1.2 About growth rates and yields

So how much can you earn with companies alone? The following naively assumes that you always get to buy companies for face value. Especially in the early game, that will rarely happen. Later in the game, you might still see vicious auction battles, but it's actually quite common to buy companies for face value because the situation where only one player has enough money to bid happens frequently or is easy to arrange.

The yield of the cheapest two red companies is a bit pathologic: 100 % per turn for the BME(1) and 50 % for the BSE(2). Sounds great, but you will rarely get them for face value, see above. The more “normal” companies in the red tier are those earning \$2 per turn. Their yield starts at 40 % for the KME(5) and then drops to 25 % for the MHE(8). Within a tier, the base income is usually the same, so the more expensive companies have a lower yield. (In return, they offer better synergies, but we will come to that later.)

In the orange tier, the yield starts at 27 % for the WT and goes down to 16 % for the PR. So where is the glory of technical progress? Those ancient red companies have a much better yield than the new orange ones... There are actually many reasons why the orange companies are usually much more popular than the red ones. The most obvious is that they suffer cost of ownership later, and if they do, it's lower (in relative terms). They “rot” more slowly. We'll come to that in a bit.

The yellow tier starts with the DSB(20) with a 30 % yield and ends with the DR with 21 %. And of course, yellow companies rot even later than orange ones. Getting the more modern companies finally seems to be a clear win.

The green tier starts with the SJ(30), with a whopping 40 % yield, and ends with the E, with meager 23 % (but still better than the most expensive yellow). Note that the four low-cost greens have a higher base income than the three high-cost, but their synergies are abysmal (in other words, they are *perfect* as companies owned by a player). The rotting of the green companies is so slow that they will only make loss in the last turn of the game. They will most probably survive until the end, which is of crucial importance, as you will see further below. Even now, you

can probably understand why you always see this greedy sparkling in the eyes of experienced players once the first green company is drawn.

But it gets even better. Blue companies *never* pay cost of ownership. They start with a 33% yield for the MAD(45), going down to 25% for the FR(60). In contrast to the green companies with high base incomes, they all have great synergies. (Note that the amount of a single synergy bonus doubles with every tier, except green also stays at +\$4.)

Purple companies never pay the cost of ownership either. Their yield starts at 36% for the OPC(70) and drops to 25% for the TSI. Overall, their yield is a bit better than blue, but their synergies are much better.

Let's finally talk about the "rotting" in a bit more detail. The blue and purple companies never rot, so you can just keep them in your private possession until the end of the game, and they will reliably pay their income. Furthermore, as their face value counts for your final score, the money you paid for them is not even lost. With green, things get a bit more complicated. In the short game, green companies have a cost of ownership of \$15 but only in the last turn. So if you keep let's say the BSR(40) until the end of the game, it will reliably pay you \$10 per turn except in the last turn where you can either close it, or you *pay* \$5 net. As the BSR will count with its face value of \$40 for your final score, it's better to pay the \$5 because it's still a net win of \$35 for your final score. In the full game, the front side of the game end card inflicts cost of ownership for green. That will apply for a couple of turns before the last turn. It's only \$10, so you will simply earn nothing for a while, and in the last turn, you have to pay \$6. Still a net win for your score, so you see how green companies will usually survive until the end of the game. They don't earn you anything in the last few turns of the full game, and in the last turn of both the short and the full game, they will even cost you a bit, but you don't have to write them off, which means a lot. Yellow, orange, and red companies will not see the end of the game if they remain in your private property (perhaps with the exception of yellow in the short game, where it's still marginally more beneficial for your final score to keep them alive). So not only will they eventually cease to earn anything, you even have to write them off at some point, and all the invested money is lost.

It's very tough to predict the exact number of turns after which an increase in the cost of ownership will happen. (Here you see a reason why it is so important to control the speed of the "flow of companies" described in the previous section.) For the red companies, we can at least try a simple analysis. The red companies will start to pay \$1 cost of ownership once the top-most company card in the deck is green. That will make the BME(1) and BSE(2) earn nothing, and it will halve the income of the four other red companies. (Once the top-most company is blue, they will all have a net negative income.) The number of companies to be drawn before that happens is 12 in a three-player game (3 red, 3 orange, 3 yellow). Be-

cause the number of orange companies grows a bit more than usual with more players (6 for four players, 8 for five players), the number of "pre-green" companies in a four-player game is 16, and in a five-player game 20. In each turn, the maximum number of companies being drawn is equal to the number of players. In addition, a number of companies equal to the number of players is drawn in the game setup. Putting all the numbers together, you can see that the earliest possible turn where a cost of ownership is charged is turn 3. In the worst case, the BME and the BSE, if bought in the first turn, will pay their base income twice. The other reds will pay their full income twice and then pay a reduced income of \$1 for a number of turns that is difficult to predict. Things are even worse if you buy a red company in the second turn. The good news: If in at least one of the three turns, the number of drawn companies is less than the maximum, everything is postponed by one turn. That's actually quite likely, especially if at least one player is intentionally slowing down the game. Less likely, but still possible, is yet another turn of delay. In any case, you can see now how the glorious yields of the red companies have turned into a struggle against time to get at least some return of investment, and how in turn 2, when there are red and orange companies in the offering, buying an orange is so much more attractive than buying that stinking last red.

The succession of companies sets the stage for the so-called tech race. It should be quite obvious by now how highly attractive it is to be ahead in this tech race by owning the more profitable and more slowly rotting companies. While that constantly drives the game forward, there are situations when individual players want to slow down the game, and of course, that's when it gets really interesting.

Let's keep things simple for now and discuss the easy solution for the rotting problem: Sell your soon-to-rot companies to a corporation, ideally for maximum price. Unfortunately, that raises another problem: How to find a corporation that is willing to agree to such a deal? The easy solution for that: *You* are the president of that corporation. Be aware that in terms of immediate growth, selling even at maximum price is actually not that attractive. In particular the early companies will rarely give you more premium than what they would have earned anyway. (Example: You own the WT(11). If you sell it for maximum price, you get \$14. If you don't sell it, you will earn \$3. \$3 earned plus \$11 face value of the WT is \$14 total value, too.) But don't forget: Companies rot, money doesn't. After you have sold the company, you have cold hard cash on hand, which you can use to buy a shiny new company in the next auction, jumping ahead in the tech race. Or you can use it for other nice things. See section 4.1.3 for more details.

What's emerging here is a strategic pattern called the "money pump": In turn 1, you buy a company. You go public with that company in turn 2 phase 2 (let's call it T2.2 to keep it short). In T2.3, you buy another company, which you sell to your new corporation in T2.6. In T3.1,

your corporation issues a share to raise more money. If nothing has gone wrong, you should have enough money to buy a new company in T3.3, which you can then sell again to your corporation in T3.6, hopefully for maximum price again (if it has enough money at this point). Rinse and repeat. The money pump is indeed the first efficient strategy most players discover. Of course, life (or a game) can't be that easy. The money pump will stall at some point. Either the corporation no longer has enough money to pay a decent price for your latest company, or even with the maximum price, your private cash is not enough to buy a new company. Additionally, there are other players who might interfere by bidding more on the only affordable companies available or even by taking over your corporation. (Remember, you are issuing shares every turn, but you only own the one president's share. Your shares will probably become cheaper and cheaper, but your control gets more and more diluted.) Good players set up the money pump in a way that it will continue to work for quite a while. The better players have a viable exit plan when the pump stalls. The best players will implement strategies that are even better than the money pump in the first place. More about that in section 4.2.

We haven't talked a lot about shares so far. As part of the money pump, you only needed that one golden president's share to control the corporation as your sacrificial lamb. The strategic power of controlling corporations, ideally with very little bound capital, is significant. But shares might make you money, too. Let's consider the best case, ignoring the effects of share trading and issuing shares for now. In that best case, the corporation pays the maximum possible dividend, *and* it manages to "double jump" at the same time. That's very hard to accomplish because paying a lot of dividends usually results in a decrease in share price (you basically pay out your book value to your investors so it can't be used to back up your share price anymore). But we wanted to assume the best case, so here we are: A single jump from one share price card to the next is on average a 10 % share price increase. The second jump is +10 % again. If you know how to calculate percentages, you will agree that together, that's an increase of 21 % (and not only 20 %). The maximum dividend is on average 31 % of the original share price. So we are at 52 % maximum yield, which might be even more if the target share price card is missing and the share price "overshoots". 52 % is enormous, much more than you can ever reach with companies alone. However, it's the best case, and it's very tough and rare. Furthermore, only the dividend is gained in cash. The share price doesn't translate into cash directly. Even if you can sell a share (only possible if it is not the last in players' hands), you will get less cash from it than the current share price. And don't forget about the worst case: Shares might not pay a dividend at all, and their price might drop like a stone.

How on earth can a corporation ever approach that best case described above? There are two possibilities: The honest one, and the collusive one. In the honest case, the corporation builds up an efficient network of synergies.

Synergies are the magic power of corporations. With an exceptionally good synergy network, corporations might be able to support growth rates of more than 50 %. The collusive approach is easier: Once more, a corporation has to selflessly sacrifice itself, in this case for the corporation aiming for those huge growth rates. Corporation A feeds its companies to corporation B for the minimum price, while A buys B's companies for the maximum price at the same time. Repeat as required. Both approaches are discussed in more detail in section 4.2.

### 4.1.3 The importance of being liquid

By now you should have realized, cold hard cash is a good thing, mostly for two reasons: Cash doesn't rot, and cash gives you full flexibility.

The first reason sounds like owning cash will guarantee you a carefree life. However, that's a premature conclusion. While keeping the cash on hand is certainly better than wasting it for an ill-fated investment, keep in mind that *Rolling Stock* is pretty much an exponential growth game. To win, you *have* to invest your money somewhere. To state the obvious: No investment is better than a bad investment but is worse than a good investment.

The second reason is so important because the moment you have a pile of cash in phase 3, you are in control. You can participate in auctions to purchase new companies (possibly even interfering with plans of others to purchase specific companies), thereby speeding up the game. But you also have the option to slow down and invest in shares. Usually, there are plenty of shares available in the bank, not all of them will be a good investment, but at least there will be some choice. Even hostile takeovers of corporations are possible. If timed properly, it will not only screw up the plans of another player, but it might even give you a strong advantage. Takeovers are very expensive, though.

Speaking of timing: The player order is often of crucial importance. If phase 3 starts, you are first in player order and you already have enough cash on hand to buy a company, but your opponents don't, then you can buy a company without them interfering in the auction, even if they could raise cash by selling shares. Only once it's their turn can they sell a share, but by then, it's too late.

Having learned about the benefits of liquidity, let's briefly discuss what lastingly destroys liquidity. Every investment has the risk of binding your cash for a long time. There are two different things to consider: Companies you can't sell, and shares you can't sell.

Shares are in a certain way easier because you can sell them to the bank *unless* it's the last share of that corporation in players' hands. Unfortunately, the latter is a very common situation. So if you own that one last share (which implicitly is always the president's share), and it's a good corporation or at least one that plays a role in your cunning plans, fine. But if it's a dying corporation not helpful to you at all, you have sunk your cash into a black hole.

To sell a company, you need a corporation to act as buyer. If you control one that has the money, fine. But if not, you need to convince another player that one of the corporations they control desperately needs your company. Owning a good company you can't sell (a green one with \$12 base income, or better a blue or purple one) is not the worst thing that can happen, but a rotting company is another black hole. However, what you usually do if you can't get rid of an otherwise useless company: You go public with it, so you convert the problem of a company you can't sell into the problem of a president's share you can't sell. There are two possible advantages: First, if you end up with more than one share after going public, you can sell all but one to create at least some liquidity (see next section). Second, a corporation, even a crappy one, usually gives you some leverage you might use to your advantage (see section 4.2.1 for details).

The most common dead-lock beginners end up in is to own two president's shares of dying corporations and not much else. Controlling multiple corporations is potentially very powerful (see section 4.2.1), but unleashing this power requires a lot of experience and skill. So beginners might be lured into running two corporations but then screw up and drive them both into the ground, basically kicking themselves out of the game.

Take-home message: Think twice before you bind your cash. Going public for no good reason, investing in a share that becomes unsellable later, or paying too much for a soon-to-rot company are the most common ways to sink your cash into black holes. Sometimes, it is indeed best to sit on your cash, even if it earns nothing.

#### 4.1.4 Starting share price: high or low?

When going public (phase 2), you usually have a number of starting share prices to choose from. But which is the best? The problem has actually more than the one dimension besides share price. The other axes are how much money you have to pay from your own pocket and how many shares will be issued. The table below lists all possible starting share prices if you go public with MAD (\$45 face value).

| share price | shares issued | money paid | treasury |
|-------------|---------------|------------|----------|
| \$22        | 6             | \$21       | \$87     |
| \$24        | 4             | \$3        | \$51     |
| \$26        | 4             | \$7        | \$59     |
| \$28        | 4             | \$11       | \$67     |
| \$31        | 4             | \$17       | \$79     |
| \$34        | 4             | \$23       | \$91     |
| \$37        | 4             | \$29       | \$103    |
| \$41        | 4             | \$37       | \$119    |
| \$45        | 2             | \$0        | \$45     |

Let's first look at the money you pay from your own pocket. Obviously, you want to minimize that. However, the more money you pay from your pocket, the more money will be in the initial treasury of the new corporations. The formula for initial cash in treasury is quite easy:

It's the face value of the company going public plus twice the money you paid from your pocket. In other words: If you really need a lot of initial cash, it might be worth paying private money to get it. If the corporation doesn't need that money soon, it's very bad. (But keep in mind that whatever you do, you will never lose personal book value immediately. Going public will not change your personal book value by design. The shares you get will always have exactly the value of the private company and the cash you have thrown in.)

As you can see, with the right combinations of numbers, it is possible to have a very high starting share price and still pay very little or no private money. A high share price has the huge advantage that you can raise a lot of money later by issuing shares. Furthermore, with a higher starting share price, you will issue fewer shares initially, so you can issue more shares later. (Remember, there are only ten shares that can be issued in total.) Thus, not only will later share issues raise more money, but you can also do it more often. Only one share can be issued per turn, so the amount of money you can raise by issuing a single share will be crucial for the growth rate of your corporation. On the other hand, issuing shares is optional, so you have the flexibility to not issue a share if you don't need more money, thereby not diluting your own shares. In contrast, with a low share price, you often don't have a choice. You have to make use of every opportunity to issue a share if you are in desperate need of every little money you can get. But because of your low share price, you have already issued more shares initially, so you might hit the limit of ten issued shares quite soon.

So what is a low share price and/or many initially issued shares good for, then? It's more subtle, but there are actually a number of merits:

- If a corporation goes south, you find yourself caught with that last share that can't be sold. In that case, the less money bound in that last share, the better. Sometimes you might even plan the demise of your corporation from the beginning. A low share price might be just perfect for your evil plans.
- You have learned earlier how important liquidity is. Going public with many shares issued gives you the opportunity to sell a number of the newly gained shares in the following phase 3. Let's compare the first and the last row in the table above. If you go public at a \$45 share price, you don't have to pay anything, but you receive exactly one share which can't be sold (unless somebody else buys the other share, which is initially owned by the bank). If you go public at \$22, you gain three shares. In the subsequent phase 3, you can sell one for \$20 and then another one for \$18, returning \$38 to you. In terms of liquidity, you have paid \$21 to start the corporation, then you've got \$38 back, so you've effectively *gained* \$17 cash on hand, *and* your corporation has more cash in its treasury, too (\$87 instead of \$45). On the other hand, you only own a sixth of the cor-

poration now, not half of it, and a hostile takeover is easily possible.

- With more shares on the market, there is a greater potential for share price manipulation (which might be good or bad). As an example, let's look at the first row of the table above again. Let's assume you have the MAD, the whopping amount of \$99 cash, and you control the "Bear" corporation with a lot of companies. (It's a pretty good situation to be in and pretty unlikely to accomplish. It's just an example.) After converting the MAD into the "Orion" corporation at \$22 share price, you have \$78 cash left and you own three "Orion" shares. Three more "Orion" shares are in the bank. In the subsequent phase 3, you buy them all, one after another, for \$24, \$26, and \$28. (There they go, your remaining \$78 cash.) In phase 6 of the same turn, the "Orion" buys a lot of companies from the "Bear" for minimum price. Let's assume, for the sake of it, the "Orion" buys enough to back its hugely inflated share price, and even manages to rise from \$28 to \$34 in phase 9. Now let's check what happened: The MAD has \$45 face value, and you had \$99 in cash, in total \$144 (plus the president's share of the "Bear"). Now you have six "Orion" shares worth \$34 each (and still the "Bear" president's share, but it has probably dropped a lot in value). Six times \$34, that's \$204, not too bad for a one turn yield. And that doesn't even include any dividends the "Orion" might have paid. (You own all shares, so paying dividends is attractive if you don't need the cash in the corporation for anything else.)
- A constant sub-theme in *Rolling Stock* is bin packing. Many things you can buy (companies, shares) are ridiculously expensive compared to the money you have available. If you buy one expensive thing, you might still have quite a lot of money left, but not enough to buy another thing. If you buy one cheaper thing, you might have just enough to buy another not so expensive thing. In that case, the investment in two things of mediocre quality might be more profitable than buying only one high-quality thing and letting quite a lot of cash sit idle. In that way, lower share prices alleviate bin packing problems. A lower priced share might suddenly appear very attractive if it is the only possible place to invest your remaining money. (Sometimes, however, you want to prevent other players from buying shares of your corporation, in which case the low share price is more of a disadvantage.)

There is a completely separate aspect to take into account when choosing the share price: In most cases, you want to have some distance between your share price and those of other corporations. If you find yourself in a densely populated area of the share price row, you will suddenly realize the "other" reason why the game is called *Rolling Stock*...

#### 4.1.5 Pay dividends: Really?

The favorite task of beginners is apparently to carefully calculate the "optimal" dividend to pay in phase 8. They invest a lot of time and effort – and in most cases they screw themselves up.

Experienced players tend to the extremes when it comes to dividends. In most cases, they simply pay nothing. The second most popular option is to pay as much as possible. Only rarely do they bother to calculate something in between. If that happens, it's probably not to engineer the share price carefully, but more to optimize the personal cash for the next turn. If you are only missing a \$ or two to buy a particular company or share, it might be worth it to pay just enough dividends to cover that shortfall.

To debunk some common misconceptions: First of all, if you don't plan to sell shares, or if you only own the president's share anyway, the share price is almost irrelevant for you personally (unless we are getting close to the end of the game when the value of your shares matters for your final score). Sometimes you might actually be interested in a *low* share price to buy a share for cheap in the next turn. Paying just enough to still raise the share price sounds like a fool-proof way to increase your wealth, but in most cases, it is harmful in the long run. The main reason you are interested in a high share price is to be able to raise more money by issuing a share. But if you are in need of more cash in the corporation's treasury, why should you pay any dividend at all? For the fastest growth of your corporation, you don't want to pay dividends at all, and you want to issue as many shares as possible. Issuing shares is basically taking out a loan where the interest has been replaced by dividends. Especially in a very diluted corporation (one that has issued many shares and where you own only very few of them), paying dividends feels very much like paying interest on all those outstanding loans. You don't want to do that if you can avoid it. In return, that means paying dividends might actually be really attractive if you own most of the shares of a corporation.

Rule of thumb: Only pay dividends if you know why. Paying a significant amount of dividends and then issuing a share in the following round is usually a sign that something is wrong or you have just switched strategies (which should be something you do consciously and not accidentally).

However, see section 4.2.2 for a legitimate strategy where you issue shares and pay dividends at the same time. (In fairness, it's a strategy to limit the damage after a disaster – so arguably, something has gone wrong indeed.)

#### 4.1.6 How to tame (or arouse) the foreign investor.

The foreign investor is basically there to ensure a minimum speed of the game. He also "cleans up" companies from the offering that nobody wants any longer. In a typ-

ical game with reasonably experienced players, the foreign investor will take quite a while to get hold of a company. Usually, he stays a tad behind for a long time, just a few \$ short to buy anything. The more players slow down the game (intentionally or not), the earlier the foreign investor will strike.

Once he has at least one company, it can be bought by corporations at maximum price. Quite often, that doesn't appear overly attractive for the corporation, so the foreign investor might just sit on his company until it rots. However, you should consider the secondary effects of buying a company from the foreign investor: It funnels quite a lot of money into his pockets. This money will help him to buy another company soon (which can then be bought again, gaining him even more money). In that way, you can spin up another "money pump", one that doesn't benefit a player, but the foreign investor. Why would you do that? Simple: To speed up the game. It might very well happen that one of your corporations is buying crappy companies from the foreign investor for the sole purpose of speeding up the game.

That puts other players' efforts to slow down the game into a new perspective: If they simply refuse to buy companies, they will pretty soon allow the foreign investor to buy a company, which in turn might give the "tech racers" an unexpected opportunity to speed up the game again. In a situation where the foreign investor has just enough money to buy the cheapest company, it might more effectively slow down the game if a player buys that company than if he leaves it up to the foreign investor.

#### 4.1.7 I have screwed up. How to catch up now?

As every game with exponential growth, *Rolling Stock* features the effect that "the rich get richer". Each of these games needs a compensation or limitation mechanism to avoid a small wealth difference early in the game trivially growing over the course of the game, thereby deciding the game too early (provided the leading player doesn't make any grave mistakes). Adjusting the strength of those compensation and limitation mechanisms is difficult. If they are too strong, players will feel punished for playing well. (And of course, the ideal strength of compensation is strongly influenced by personal taste.)

I can safely claim that *Rolling Stock* is in no danger to compensate too strongly. It's rather unforgiving, but not necessarily more unforgiving than the average 18xx game. That's certainly not in line with modern Euro-style games, which usually offer a pleasant entry path for the beginner. But at least, *Rolling Stock* has the training game, so you can learn from your mistakes and improve your strategy without sitting through four or more hours of a full game you can't win any longer.

Having said that, there *are* in fact compensation mechanisms. First, wealth (at least in the first half of the game) is not a fixed asset, but it "rots". Second, it's an interactive game – there are "gang up on the leader" effects,

not as strong and obvious as in a wargame, but still quite significant.

The good news is that there is always only one winner but at least two other players that don't win. If the player that is about to run away with the game is drawing his enormous growth from an aging mega-corp, all the other players can work together on speeding up the game to destroy that mega-corp. If it is the other way round and the advantageous position of the leading player is based on a few modern companies, the other players might decide to slow down the game to draw more revenue from their numerous old companies. Even in the bleak situation where the leading player is ahead in everything, the tech race, personal wealth, *and* growth rate, there is some hope if the other players cooperate strongly, build shared corporations with high synergies, and boycott any trade with the leading player.

A different situation is if there are two or more players competing closely for the leading position while one player has fallen behind a lot. For example, Alice and Bob are both in good shape and neck and neck, while Chris's situation is almost hopeless. *Rolling Stock* is full of possible win-win deals. The problem is how to distribute the collective gain. In a situation like this, Alice and Bob have little incentive to deal with each other. They want to deal with Chris, who is currently not threatening their position. Chris has a strong position in the negotiations and will probably be able to get most of the collective gain on his side of the deal because every little that either Alice or Bob gets will help them against the other. Alice and Bob can't refuse so many deals with Chris, even if their own gain is small, because they would otherwise gain nothing while Chris can still deal with their competitor.

There are, however, points of no return. If you manage to bind all your cash in a few unsellable shares of dying corporations (see section 4.1.3), you may as well go home. Don't let it get that far.

#### 4.1.8 The last turn.

*Rolling Stock* is designed to be interesting to the very last moment of the game.

You can't be sure how many turns there will be in total, and in particular, the game could be ended by reaching the \$100 share price, in which case, the final "last turn cost of ownership" on the back of the game end card might never kick in, which makes a huge difference for the fate of many companies. If the game hasn't developed in an extremely unusual way, a \$100 share price end will not happen much earlier than the "regular" game end (via flipping the game end card) would have happened anyway, usually only one or two turns earlier (if it happens at all). Often you can be quite sure that a \$100 share price end will *not* happen. Share prices can only go up so fast, and if no corporation is anywhere close to the \$100 share price in the late game, you can be positive that the "regular" game end with the increased cost of ownership in the last turn will happen. On the other side, if a \$100 share price end is within the realm of possibility, you can usually not be sure that it will



actually happen. Even if a corporation is close enough, the player who has the power to drive up a share price to \$100 might not be interested in an early game end. In general, it's pretty hard to get up to \$100 at all, and something might go wrong in the last moment. Things get really interesting in that case.

A \$100 share price end will catch you in the middle of business-as-usual, while the last turn of a game with a "regular" end will have a very special twist because of the increased cost of ownership. Essentially, there will be quite a lot of companies that will have a negative revenue, and you have to decide if their contribution to the book value will be more valuable than the additional income you (privately or your corporations) will gain by closing them. At that point, you have to do the math to see what combination of paying dividends and adjusting share prices will gain you the most for your final score. Often, that's a very subtle interplay of numbers, especially if share price cards next to your current share price are missing at the time you adjust the share price. Sometimes all your efforts will have the somewhat frustrating result that it doesn't actually matter what you do, the net gain might be more or less the same. There are certain situations where things are crystal clear, though. A common one is that in phase 3 of the last turn, the share price of a particular corporation was inflated a lot (by buying the shares of that corporation – remember that in the last turn, there are no companies available for auction any longer, so players will invest more money in shares). That corporation will almost certainly double-drop in phase 9, so there is no benefit in keeping companies only for their book value. It can close all companies that are not profitable any longer, so it will earn more, and then it can pay out as much as possible without any remorse.

## 4.2 Strategic roles and patterns

This section describes a number of more advanced strategic patterns and strategic "roles" players can adopt. In practice, patterns are rarely applied in their pure form, and players might need to switch from one "role" to another to adapt to new conditions. In particular, never forget that *Rolling Stock* is an interactive game. Whenever a player is highly successful in implementing a particular scheme, the other players should destructively interfere.

### 4.2.1 It's a share game: privatize profits, socialize losses.

If you look at a game where every player is busy with the basic money pump as described above, you might ask yourself why *Rolling Stock* is called a share trading game. You only see corporations issuing shares, which pile up in the bank, and every player only owns a single share, the president's share of the corporation they founded themselves. Once you get a bit deeper into the game, you will see that there are reasons to get involved in share trading at some point during the game. Fundamentally there are

two different reasons to own shares: to make money and to exercise control.

With the money pump pattern, you are basically abusing your corporation pretty badly. But guess what? It's actually possible to build corporations that make money, even lots of it. Further below, we'll look at a few examples. For now, let's accept that there is such thing as a profitable corporation. If you are the president of such a corporation, you have several incentives to own more than only the president's share. First, it's profitable. Second, you want to stay in control of that corporation. Third, once you own a significant number of shares, paying dividends finally becomes an attractive option to generate cash on hand. Fourth, if you have the best running corporation, you are probably interested in slowing down the game, so you better invest your money in shares instead of using it to speed up the tech race.

It gets more interesting if you are not the president of that nice corporation. If you have enough money for a hostile takeover, you might want to go for it. But what if you only have enough money to buy a single share? As a short term investment, shares rarely make sense. By buying it, you are already driving up the share price, which makes it more difficult to "naturally" rise more in phase 9. As an example, let's assume the Horse corp has a share price of \$22. It will probably have enough book value for the "double jump" to \$26. So you think it might be a good investment. You buy a Horse share, driving the share price up to \$24, which means you have to pay \$24 for that share. In phase 9, the Horse only manages to go up to \$26. With the now higher share price, the double jump doesn't work any longer (which would now lead to \$28). In phase 1 of the next turn, the president of the Horse decides to issue a share. Bang, the share price goes down to \$24. Later, in phase 3, you decide to sell your Horse share. The share price drops to \$22, which is the amount of money you get. The Horse is actually doing quite well. It could raise its share price, it made a reasonable amount of money by issuing a share, its shares are kind of undervalued (after issuing a share and your sale). Quite attractive to buy, I'd say. But still you have made a \$2 loss with your short term investment. As a rule of thumb, short term investments are only good if you can be reasonably sure that a significant dividend will be paid without totally ruining the share price. Unfortunately, a president might not feel like paying dividends if he would pay a lot into the pockets of his opponents. A well-run company where the president is already heavily invested in (ideally 50% or even more) is a pretty good co-investment, short or long term, as long as your own share count is much lower than that of the president. Let's say the president has three shares and you have one. If you are an 18xx player, you'll recognize the common pattern here. There are other more or less remote similarities to 18xx: If you buy a share of a corporation controlled by another player, you are taking the chance that this share will at some time be the last one a player owns. While there is no additional liability for the president in *Rolling Stock*, having bound your money

in an unsellable and possibly dying share is pretty bad, as we have seen before. In *Rolling Stock*, players can only sell one share per action, so the quick 18xx-style dump doesn't work. But if you own one share and the president owns one share, you might become the president sooner than you wish. In situations like this, the player order for the next turn is of crucial importance. (Once more, nothing new for 18xx veterans.)

Now let's talk about exercising control. Again, you'll see similarities to other share trading games, in particular 18xx. A prime example of the power of control is if you control two corporations, one with a very low percentage, and the other with a very high percentage. The extreme case is 10% vs. 100%, and it's actually quite realistic to get close to that. Once you are there, you can apply all the old tricks you know from 18xx. Your low percentage corporation will feed your high percentage corporation. The bad and rotting companies will end up in the former, and the good and new ones and the better part of the cash in the latter.

#### 4.2.2 Corporations doomed to die: bleed them dry.

It will happen even to the most experienced players, sometimes even on purpose: A corporation has reached the point of no return and is doomed to die. In that case, you want to pick the bones as efficiently as possible. The best way is usually to have another corporation handy and transfer everything that's still worth something from the dying corporation into the other one. Here you can see how it can make sense to keep a crappy old company around. If your dying corporation has only one company left, it couldn't sell it even if it is a moderately decent one. If you have kept back an even crappier company, it can sell the moderately decent one to the other corporation (where it may enjoy an unexpected revival thanks to synergies) and only retain the really crappy one.

However, at some time, the dying corporation is completely empty; it has barely any money left and only owns one very old company with no (or even negative) income. What to do then? Now you can switch into a less efficient bone-picking mode: Pay dividends. It's so inefficient because a dying corporation is usually very diluted already, so most of the dividend has to be paid to the bank. An example: The Star corp owns the WT(11) and \$10 (from selling its last relevant asset, the DSB(20), for minimum price to the Horse, an "allied" corporation). It has a share price of \$10 and currently 5 shares issued. The cost of ownership is currently \$3 for orange companies, so it doesn't earn anything any longer. Swapping back and forth another company between the Horse and the Star isn't worth the little money that is left in the Star. The president of the Star decides to issue another share. The share price drops to \$9, the treasury increases by \$9 to \$19, and now there are 6 shares issued. Then the Star pays the maximum possible dividend: \$3 per share, so \$3 to the president and \$15 to the bank. Remaining treasury:

\$1. The share price drops to \$7 (the book value of the Star is only \$12 at that point). Next turn, another share is issued. The share price drops to \$6, the treasury goes up to \$7, and now there are 7 shares issued. The star pays \$1 dividends per share, giving \$1 to the president and the remaining \$6 to the bank. Then the share price drops to \$0 and the Star is history. Effectively, the president had a \$10 unsellable share, which has now disappeared, but in the process, he got \$4 dividends, so he basically recovered 40% of the value bound in an unsellable dying share. Better than nothing, I'd say.

#### 4.2.3 An undying corporation: "the scavenger".

After talking about so much corporation misery, finally a success story shall be told. And it's even an unlikely one, about companies already declared dead that experience an Indian summer.

The basic idea here is that a corporation is created that serves as a "scavenger": It buys all the companies nobody else wants any longer for minimum price and creates a synergy network so efficient that it can compensate the cost of ownership. The scavenger doesn't really need to earn a lot. Because it buys its companies for minimum price, it will gain a lot of book value, which drives up the share price, which in turn makes it easy to raise money by issuing shares. (Remember, as long as you don't plan to pay dividends, issuing shares pretty much equals free money.)

The scavenger works best if there are many synergies in the deck. You almost certainly want to have the "synergy monsters" PR(19) and in particular the DR(29). In a five-player game, all orange and red companies are in the deck, and the chance for getting the DR are pretty high (75%). That's the ideal setup for a scavenger. As a model calculation, let's consider a corporation that owns all red companies, all orange companies, and the yellow DR(29). The sum of face values of the companies is \$174. Without cost of ownership, it earns \$40 base income and \$63 synergy bonus, adding up to impressing \$103 income per turn, a yield of 59% relative to the sum of face values. Obviously, the scavenger will only reach this size when cost of ownership already applies. With \$1 cost for the red, the total income will still be \$97. With \$3 for the red and the orange, we are down to \$61. With \$6 for red, orange, and yellow, we are down to \$13. Quite a downfall, but take into account that at that time, every single red and orange company would lose enormous amounts of money individually. In most cases, owners would simply close them, but the scavenger will do them a favor and will buy all those companies for minimum price. The scavenger will build up gradually. Ideally, you can convince the other players to sell you their companies for minimum price a bit before they would actually close them. It will still be a win for them. While the scavenger will buy most of its companies at minimum price (the red in a first wave and later the orange, perhaps even yellow very late in the game), you

have to arrange to get a few key companies (most likely the PR and the DR) earlier. A typical start of a scavenger is if you privately own the PR and go public with it.

To profit from the scavenger (whose gains will mostly be expressed in share price appreciation), you need to own as many shares of it as possible. Other players will probably join the cause anyway once they have spotted the successful scavenger scheme. In that case, you even have to defend your presidency – and get even steeper share price increases in return.

Despite all the synergies, you can't really expect to keep the red companies until the end of the game. Even the orange ones might need to be closed at some time. If that happens, the scavenger might very well die after all. (Start to sell shares in time in that case. Selling them all in one turn will cost you a lot. Better get rid of them gradually.) There are ways to keep the scavenger alive, though:

- Try to scavenge all the way up to yellow. However, other corporations have a good chance to keep yellow companies running profitably for quite a while, so collecting the yellow companies is not that easy.
- Try to end the game early with a share price of \$100 so that the highest cost of ownership will not kick in. (Unfortunately, you can't rely on others to do you the favor. And a pure scavenger will have a hard time reaching the \$100, but you might be able to mix in some more modern companies, see next item.)
- With a sufficiently inflated share price the scavenger will raise so much money by issuing shares that it can at some time switch from scavenger mode into tech-leader mode. Read on in section 4.2.5 for that kind of corporation.

#### 4.2.4 “The money pump” vs. “the private corporation”: self-sustaining strategies of different kinds.

We have already discussed the “money pump” at some length. Let's discuss a bit in which ways the money pump will stall eventually. The exact mode of failure depends on details of the setup (which companies you buy for which price, which start share price you chose) and on how many other players are running money pumps (or other strategies that speed up the game similarly or even more). The more companies that are bought per turn, the faster higher priced companies will show up in the offering, and the sooner there won't be enough money to buy the next company. In other words: If you are the only one speeding up the game, your life is easier.

The cash might get tight in two places: Your sacrificial corporation might not have enough money to buy your private company for maximum price. Or even if you get the maximum price out of the corporation, your personal cash might not be enough to buy a new private company.

The first problem is more likely to occur and luckily also easier to solve. It will occur later if the companies you feed to your corporation have some good synergies so that the corporation generates more income. (So you care a bit about the wellbeing of your corporation after all.) You can also increase the cash of your corporation by selling the companies again. It's quite possible that another player is running a different strategy and controls a corporation that might be very interested in buying companies from other corporations for bargain prices. If you still run into the situation of not having enough cash in your corporation, you could simply wait for one turn. The next turn will allow you to issue yet another share for more cash in the corporation, and in the meantime, the private company you are keeping is at least paying some money into your private pocket. Not the worst thing that can happen. If your sacrificial corporation is already quite diluted, you might want to consider an exit strategy: Use your private company to go public. You will own 50% of that corporation, but you will only own very little of your sacrificial corporation. Now your new corporation can buy all the companies that have been accumulated in your sacrificial corporation for minimum price. A nice kickstart into your new life as president of a (for a change) successful corporation.

If you could sell your last private company, but end up with not enough money to buy a new one, you are forced to try something else. A short term investment in shares rarely works, so you can't expect to quickly earn enough money to restart your money pump. Now it's time to look at the shape of your sacrificial corporation. Perhaps it has accumulated a decent portfolio of companies. So you might actually invest in your *own* corporation for a change. It might also be a good time for some long term investment in other shares, or – probably more effective – for a hostile takeover. If another player has run a money pump too, but did better than you and was able to buy a new company this turn, they will now have no money left and you will probably be able to take over their sacrificial company. It will definitely destroy the money pump of your opponent, but it still might not be a net win for you. A hostile takeover is usually very interesting, and its long-term harm and benefit are difficult to predict.

There is a rarely used strategic pattern that is in some way the exact mirror image of the money pump: The “private corporation”. The basic idea is to utilize the synergies of companies in a “pseudo-private” corporation, i.e. one where you own most if not even all of the shares. Owning all (or most) of the shares has two advantages: Paying dividends doesn't feel like paying interest any longer, you get all (or most) of it into your own pocket. And you can sell your private companies to your corporation for minimum price without hurting yourself. It stays “yours” anyway. Starting a private corporation is quite similar to starting a money pump. You buy two companies. Then you go public with the one and sell the other to the newly formed corporation. The first thing you do with this money, however, is to buy the other share(s) from the bank so that you

own 100 % of the corporation. The next priority is to buy another company. You might not have enough cash to do so, but you can pay dividends like crazy. The share price of your corporation is not relevant for quite a while (because you will avoid issuing shares and diluting your own shares). You need to tailor the dividends such that you will be able to buy the next company as soon as possible and at the same time have enough cash in the corporation to buy the company from yourself for a minimal price. As with the money pump, you rinse and repeat as often and fast as possible. You need really good synergies to make it work. And since you are not leveraging share issues as a source of money, this strategy is a lot slower than the money pump. Against a gang of opponents that are all pressing for the tech race, the private corporation will melt away faster than ice cream in the sun. However, if the game goes slowly, for whatever reason, you might fare well with this strategy.

So why do I consider the private corporation a mirror image of the money pump? You are basically doing the same thing. As often as possible, you buy a private company to sell it in the same turn to the one corporation you control. However, the money pump strategy is focused on the wellbeing of your private purse, while the private corporation strategy is focused on the wellbeing of your corporation. That little detail works like inverting the sign on all the numbers:

- The money pump player (MPP) owns only one share, which is constantly diluted. The private corporation player (PCP) owns (ideally) 100 % of the shares.
- The MPP issues a share every turn. The PCP (ideally) never issues a share.
- The MPP sells private companies at maximum price, the PCP at minimum price.
- The MPP never pays dividends. The PCP pays as much dividends as possible (only retaining enough money in the corporation to buy the next private company at minimum price).
- The MPP wants to speed up the game, ideally damaging the other players more than themselves. The PCP wants to slow the game down.

#### 4.2.5 “The trader” and “the builder”: natural partners.

The money pump and the private corporation are more or less self-sustaining strategies. In fact, you are mostly interested in the other players not to interfere with your scheme. The two strategic roles introduced in this section are cooperative. They are more efficient but require active cooperation with each other.

The general idea here is specialization. We basically split the machinery already known from the money pump and the private corporation into two parts. The “trader”

is the part that buys companies in auctions and then sells them to corporations, while the “builder” is the part that runs the corporation that buys the companies.

In the case of the trader, the benefits of specialization are easy to understand. If you set up a money pump, you have to throw in one of your companies to form your sacrificial corporation, and after that, you have to maintain control of it. That binds a significant amount of your wealth. If you specialize as a trader, you can use all of your cash to buy companies, and ideally you will sell all your companies in phase 6 so that you start the next turn again with your whole wealth in form of unbound cash. Essentially, you have almost doubled the amount of money per upstroke of the pump.

As a builder, the benefits of specialization are a bit more subtle. As you are not required any longer to buy companies yourself (in the pure case, you will only buy one company in the whole game, the one you use to found your mega-corp), you can use your money for other things:

- Start your corporation with a higher share price and a larger contribution of your own cash. That gives it more initial money and allows it to raise more money by later share issues. Both are crucial for the builder strategy because you plan to buy many companies.
- Buy more shares of your own corporation. That has a dual benefit: First, it defends against a hostile takeover. And second, your corporation is supposed to grow a lot so its shares are usually a very good investment, which also doesn’t speed up the game. (Despite feeding the traders, the builder is still interested in not speeding up the game too much.)

As mentioned in section 3.1, sellers and buyers of companies are “naturally promiscuous”, so there is no real need for long term bonding between a particular trader and builder. You can find your trade partners anew each turn, quite possibly even players that have not really adopted a trader or builder role but just happen to have a company available or the need for one. Still, each role works better if somebody else is playing the other role. A builder needs to leverage synergies a lot, so the builder role becomes more attractive with fewer competing builders and more players in total (as more players mean more companies). I’m pretty sure that a three-player game can only accommodate at most one builder, while a five-player game might just be able to accommodate two. The limit for traders is less strict. It’s also very easy to change from a trader role into a different one. Traders are very flexible because they don’t bind their cash in president’s shares.

When discussing the scavenger, we have seen how powerful synergies can be. The builder is more interested in the shiny new companies, and synergies are even more powerful there (plus, they don’t suffer from the cost of ownership). You can easily reach yields of more than 40 %; good builders will even reach more than 50 %. A mid-game example would be the FS(37), SBB(26), KK(25), and the

SNCF(24) with a combined face value of \$112 and a total income of \$48 (43%). This corporation will still rot at some time (but take into account that a good builder will manage to end the game early with \$100 share price, thereby avoiding the increased cost of ownership in the last turn). A simple late-game non-rotting combination would be VP(80), MM(75), and LHR(54), combined face value \$209, total income \$97 (46%).

A possible problem between trader and builder is to find the “fair” price for a company. For a brand new company, paying face value will be too low, perhaps with the exception of some very special cases, while the maximum price will usually (but not always) be too high. Trader and builder have to meet somewhere in between.

Let’s summarize both roles, in their purest form (which you might deviate from more or less, as required by the given situation):

The trader...

- ...buys companies that are attractive to other players’ corporations, using as much as possible of his cash.
- ...sells companies for as much as possible to other players’ corporations (but can’t expect to always get the maximum price).
- ...will never start a corporation.
- ...avoids to bind cash in shares. (Investment in shares might be a carefully considered plan B, in case of bin-packing problems or if no suitable company to buy or corporation to sell it to is available. The trader already knows to a certain extent which corporations will become good ones (namely those he intends to offer good deals), so he can do a kind of “insider trading”).

The builder...

- ...buys only one company (preferably one with many synergies and a relatively high face value).
- ...goes public with that company, maximizing share price and initial treasury. (He will happily pay private cash to accomplish that.)
- ...will issue shares if the raised money can be used to buy more good companies.
- ...aims to own as much of his corporation as possible. (Which will usually be less than 50%. The builder does not run a “private corporation” as described before. He will often issue shares, thereby diluting his own shares.)
- ...tends not to pay dividends until late in the game. (If there is really nothing suitable to buy and the percentage owned by the builder is reasonably high, dividends might be paid earlier.)
- ...buys as many companies as possible from other players and the foreign investor, as long as the price is reasonable and there are plenty of synergies.

#### 4.2.6 “Master-slave”: the holy grail

The “master-slave” pattern is very difficult to implement, probably only feasible later during the game, in case you find yourself in control of two corporations anyway.

In a master-slave setup, you try to combine the advantages of the money pump and the private corporation. You need two corporations, a “sacrificial” one and a “private” one. Ideally, the sacrificial corporation has a high share price and you own as little as possible of it. In contrast, you maximize your percentage of the private corporation, ideally up to 100% (which explains why we call it a private corporation – but even if you won’t be able to get up to 100% ownership in most cases, we’ll continue to call it a private corporation in this section). An initially low share price makes it easier to maximize your percentage.

Then you basically connect a money pump and a private corporation in series. You buy private companies and sell it to your sacrificial corporation for maximum price, as in the money pump. Your private corporation buys the companies your sacrificial corporation has acquired last turn, but now for minimum price. Your sacrificial corporation will issue a share every turn and will never pay dividends. Your private corporation will never issue shares and pay as much dividends as possible while keeping enough money to buy the next batch of companies from the sacrificial corporation for minimum price.

With that many moving parts in your money machine, many things can go wrong. On the other hand, there is a certain amount of flexibility. The sacrificial corporation could also buy companies from other players or the foreign investor if they are a good fit for the private corporation. In that case, you don’t need to buy as many companies privately any longer, so you can use your cash to increase your percentage of the private corporation or to defend your presidency of the sacrificial corporation.

### 4.3 Your turn...

You know the basics now. You have learned the most important strategic patterns (which will almost never show up in their pure form, but interchanging and intermixed). Finally it’s your turn. Play the game. Try out different strategies. Refine them. The patterns provide you with a vocabulary, helping you analyze and understand your own strategies and those of others. You can say things like “I’ll run my money pump for one more turn.” or “Since you appear to be a builder, I could be your trader and offer you my nice MS company.” What will emerge in a good game of *Rolling Stock*, however, is far more complex than anything described in this chapter. While it is a good thing to have some rules of thumb and a general strategic intuition in place, be prepared to act against them if required by sufficiently special circumstances. *Rolling Stock* is subtle and brutal at the same time, which I hope you will enjoy.



## Chapter 5

# Designer's notes

I can't deny it: I'm a big fan of the 18xx series of games. But the stock market in 18xx games never felt "real" to me. I accepted it as a game mechanism (in fact, a very effective game mechanism) but I couldn't really consider it a realistic simulation of actual stock trading. I felt most bewildered when a crappy corporation paid its last pennies to the share holders and the share price went *up*, while a super-solid corporation that withheld to buy another mega-profitable train went *down* despite the glorious future it was facing. Then everybody bought those exceptionally undervalued shares, but the share price would only go up (by one meager step) at the *end* of the share round... Hence, the urge to "fix" the stock market was there for as long as I have known 18xx (i. e. since the early 90s).

In 2006, I put together some concrete ideas for a new stock market to replace the regular stock market in one of the more straightforward 18xx variants, let's say *1830*. Pretty soon, it became obvious that my own stock market would be so different that I'd better develop a completely new game for it. I considered various themes, from industrial manufacturing to space flight, but in the end, I realized that I wanted to keep things very pure. The game should be almost exclusively about stock trading. The theme, if any, should be quite thin, and the rules damn simple. That was not entirely unheard of. In my 18xx group, we had already experimented with some kind of "1841 without a map". *1841* has a lovely map, with changing national borders, alpine tunnels, and mountain passes, but the most interesting things happen off-map: Stock trading, forming new corporations, building complex structures of corporations that own other corporations, and more. So in some way it was tempting to "abstract the map away" and have (nearly) as much fun. We never really got to working it out and making a real game of it, but not much later, Andreas Trieb had a prototype on the table for an 18xx variant about airlines that didn't need a map, either.

But back to 2006: The burst of the dotcom bubble was still echoing in my ears, and in some way, I thought it might be a good theme for a game where the stock market means everything and reality not so much. I had been working as a freelancing IT consultant from 2000 to 2005, and in my prototype I could use actual companies I

worked for, many of them bankrupt by now. I could call the game *1998*, so it had at least a "1" and a "8" in it. After a few months of leisurely thinking while waiting for the bus and such, I had the outline of a game that would have the following features:

- Players were venture capitalists that "discovered" hopeful new-economy startups and either led them to a hugely hyped IPO or sold them for loads of money to existing corporations. (Funny enough: *Rolling Stock* has a completely different theme but this part of the story is still shining through.)
- The startups worked as some kind of combination of private companies and trains in conventional 18xx games. (Nothing changed about that.)
- The startups came in a deck with rainbow colored tiers, simulating the progress of technology, and suffered a cost of ownership at some time. (I had worked out this idea down to the level of detail where the cost of ownership appears on the back of the cards so that it would "automatically" display the current cost. The fundamental idea of inflicting cost of ownership instead of just removing the old trains/companies/whatever was not mine, though. It was Klaus Kiermeier's, as seen in the *1873* prototype that I was helping develop at that time.)
- The startups had funny titles and satirical effects, some of them only applicable if part of a corporation, like the "Underground Hackers" doubling their performance if you have the "Master Coffee Brewers" in the same corporation, or the "Investor's News Portal" that would boost your share price by spreading rumors. (That would have turned the game into one of those where a lot of rules are actually on the cards and you have to find good combos of cards to get things rolling. The synergies in the final game are a distant echo of this idea.)
- The game was planned as a true card game. Even the share prices were marked by cards. And the money was to be cards, too. (I had some ideas of secret simultaneous bidding, so all the "money cards" have the same back, and there are "\$0" cards in the

mix for fake bids. In *Rolling Stock*, the auctions turned out to be more straightforward than anticipated. There wasn't any real need for a complex bidding mechanism anymore.)

- Selling and buying shares had an immediate effect on the share price. After adding the idea that the new price was the relevant one, most of the restrictions on share trading in conventional 18xx could be lifted.
- At some time, “reality” had to strike, and the share price would be adjusted based on the book value and possibly some other effects.
- Dividends were set freely (within limits) by the president and paid per issued share. There was no direct connection between dividends and the current revenue or the share price.
- Hostile takeovers were a real threat. (In conventional 18xx, the president will try hard and is usually successful in keeping 50+ % of any company that is at least remotely useful or valuable. I wanted players to more often experience situations where a hostile takeover would be possible, at least in theory, so it would be a constant threat. In *Rolling Stock*, that has been accomplished by making it very attractive to issue shares while keeping only the president's share to control the growing monster. However, in the early prototype stage, I was still determined to have a 50 % bank pool limit, and hostile takeovers should be made possible by some way of buying unissued shares directly.)
- The game had small integer numbers and bin packing would be one of the problems to solve. (That was even more extreme in the early days. Starting money was even as low as \$7.)

As you can see, quite a lot of the basic ideas were there back in 2006. But at that time, I had no clue if they worked at all. And even if they worked in principle, they would need significant fine-tuning and testing. I was very aware that I was far away from a complete game. I never found the time to create a physically existing prototype to play with. For years, I was playing the game merely in my head, to some level of detail, but obviously not anywhere close to a real game.

Then came 2010, the year brought us *Railroad Barons*, an 18xx card game by Helmut Ohley. An 18xx card game? Wait a minute... However, if you compare *Railroad Barons* and *Rolling Stock*, you will immediately realize how very very different those two games are. But funny enough, they share one detail: “trains” are now “companies”. It gave me the creeps. I realized, if I only waited long enough, every single one of my ideas would be found independently by somebody else. If I then published my game, everybody would laugh at me about my copycat approach to game design. Nobody would believe me that I had all those ideas back in 2006.

So I finally pulled my ideas together and created a proper prototype to play with myself. Before doing so, I had to work out the theme properly. I realized that a somewhat realistic stock trading simulation and the dot-com boom theme don't play well together. As bizarre as it might sound, in a game, nobody would behave as insanely as so many did in reality. My theme was gone, but the rock-solid and elegant stock trading simulation was still there. I needed a new theme. The requirement was pretty minimal, the theme should be thin, after all, not distracting from the stock market. I only needed an incentive to form corporations, some kind of synergy between subsidiary companies. After all the detours, I finally came back to railroads and to network building. As far away from classical 18xx as I had gone at that time, I could still use the companies we all know and love from those games. Let's start small and early, say the *Vorpreußen* from 1835, and then go through the ages and end in space with 2038. In a flash of inspiration, I put together the first draft of the synergy network literally over night, and it worked, at least kind of. I was set to create the first “real” prototype, which I did. And then I played against myself, countless times, smoothing the roughest edges. The first test game with real players happened on January 21<sup>st</sup> 2011. Let's say, it could have been worse. The greatest disappointment was that despite the simple rules and gameplay, the game took actually a lot of time. Otherwise, things worked out mostly as expected. Obviously, many parameters needed tuning, but the general direction felt right. I was traveling quite a bit during the next months, so I had the opportunity to test the game with a whole lot of very different people in Germany, Ireland, and the USA. In mid-2011, it was done. Nothing has really changed since then. I “only” had to write down proper rules and present it all in a form that would allow interested players to build their own copies.

Among the many things that changed during playtesting with “real” players, I'd like to mention a few in a bit more detail:

- With the playing time being much longer than expected, the need for shorter game variants was evident. The *short game* and the *training game* were born. While the game was designed with all six tiers of companies in mind, the short game works surprisingly well. Sure, the full game is more fun and more epic, but if you really need to shorten the game by about an hour, the short game is a reasonable trade-off. The training game, in contrast, is significantly less interesting. However, if you are learning the game, you won't even be able to appreciate the aspects of the game that are missing in the training game. It's more likely you will screw up your position quite early in the game, and then you really don't want to sit through four hours or more in a fruitless struggle to catch up. Even if all players are beginners and nobody happens to run away with the game, a full game with inexperienced players will take a very long time, simply because beginners will



inevitably play less efficiently than experts, and it will therefore take many more turns to get to the end of the deck. The training game is really the best choice for your first game (and probably even for your second).

- Speaking about the slow progress in a game with beginners: That was actually the original incentive to introduce the foreign investor. He basically enforces a minimum game speed. But he was also a lucky strike for the game. As you can see in section 4.1.6, he opens up quite a few strategic possibilities.
- Once the game had proven to be relatively stable, I could introduce more degrees of freedom. I was very afraid of “spoiler strategies”, i. e. easy to implement dominant strategies that would kill strategic choices and “solve” the game. Hence, the original prototype was way more restrictive than the final game. The starting share price was more or less fixed. In auctions, you couldn’t choose the company to offer; you had to pick the top-most one. (All the other companies were only in the “market forecast” – similar to the newly-drawn companies in the final game.)

During playtesting, those restrictions could be lifted gradually, always making sure that they would increase the strategic choices instead of degenerating them by creating spoiler strategies.

In the end, the only thing missing was a name. Amusingly, there wasn’t even a working title in the beginning. (*1998* had to be dropped together with the dotcom theme.) When playtesting in public games meetings, the prototype with its many colorful cards attracted quite a bit of attention from other attendees. The most frequently asked question was, obviously: “What game is that?” The requirement to give some kind of answer led to the ad-hoc title *18card*. For various reasons, it wasn’t suitable as the final name of the game. Ultimately, I liked *Rolling Stock* best because of its two layers of meaning. With most of the companies being railroads, the first layer is pretty obvious. You will recognize the second layer once you have seen a number of corporations with directly adjacent share prices each issuing a share, one after another, resulting in a nice “rolling” movement of the stock prices. (It even behaves like in real life: Rolling down-hill is much easier than rolling up-hill. . .)



# Chapter 6

## Credits

### 6.1 Playtesters

I would like to thank the countless playtesters, especially those that were courageous enough to play more than one game, listed here in alphabetical order:

Aliza Panitz, Daniel Barnes, Eckhart Kinast, Greg Stark, Guido Trotter, Jan Rouš, JC Lawrence, Jean Joswig, Jens Drögemüller, Klaus Kiermeier, Manfred Möller, Michał Dzięwoński, Scott Strobele, Thomas Bornheim.

Special thanks to Greg Stark for proofreading the rules and to Scott Petersen, Eric Brosius, and Derek H. for proofreading the “Player’s Guide” and “Learning the Game”.

I am grateful to Tom Lehmann for granting permission to use the fictional corporation names from his game *2038*.

### 6.2 Corporation symbols

Most of the symbols are coat of arms of cities or states from the same areas as some of the companies represented in the game. You might want to pick the symbol of a corporation in agreement with its “theme” (which is purely cosmetic, of course – technically, symbols are only needed to keep the corporations and their shares apart).

**Red – the “Bear”** Coat of arms of the city and state of Berlin, Germany. Fits well the Berliner companies BSE and BPM, obviously, but also a good regional fit for the PR or the DR.

**Black – the “Wheel”** Coat of arms of the city of Erfurt, Germany. The wheel is a symbol of transportation and will suit any of the companies. A moderately good regional fit for the MHE, HE, SX, DR.

**Purple – the “Orion”** Published by <http://commons.wikimedia.org/wiki/User:Rursus> licensed under

the Creative Commons Attribution-Share Alike 3.0 Unported licence <http://creativecommons.org/licenses/by-sa/3.0/deed.en>. Obviously a good fit for any purple company.

**Yellow – the “Eagle”** Coat of arms of the state of Brandenburg, Germany. Good fit (regionally and coat-of-arms wise) for PR or DR.

**Grey – the “Horse”** Coat of arms of the state of Lower Saxony, Germany. Another general symbol for transportation and mobility. Regional fit for the OL and DR.

**Green – the “Star”** Coat of arms of the municipality of Tamins, Switzerland. Obvious regional fit is the SBB.

**Chartreuse – the “Android”** Logo of the Android operating system – reproduced from work created and shared by Google and used according to terms described in the Creative Commons 3.0 Attribution License. Works well for all “modern” companies as a symbol of the tech race.

**Blue – the “Ship”** Coat of arms of the town of Wehlen, Germany. Obviously a nice fit for the ports (HA, HH, HR) and the BSR. Wehlen is, however, not a port city at all. It’s an inland city in Saxony. So SX (and DR anyway) is a good regional fit.

**Brown – the “Jupiter”** Another “space” symbol, good for anything purple. Found on Wikimedia Commons, public domain.

**Magenta – the “Saturn”** And yet another “space” symbol. Published by Everaldo Coelho under LGPL, <http://www.gnu.org/licenses/lgpl.html>.