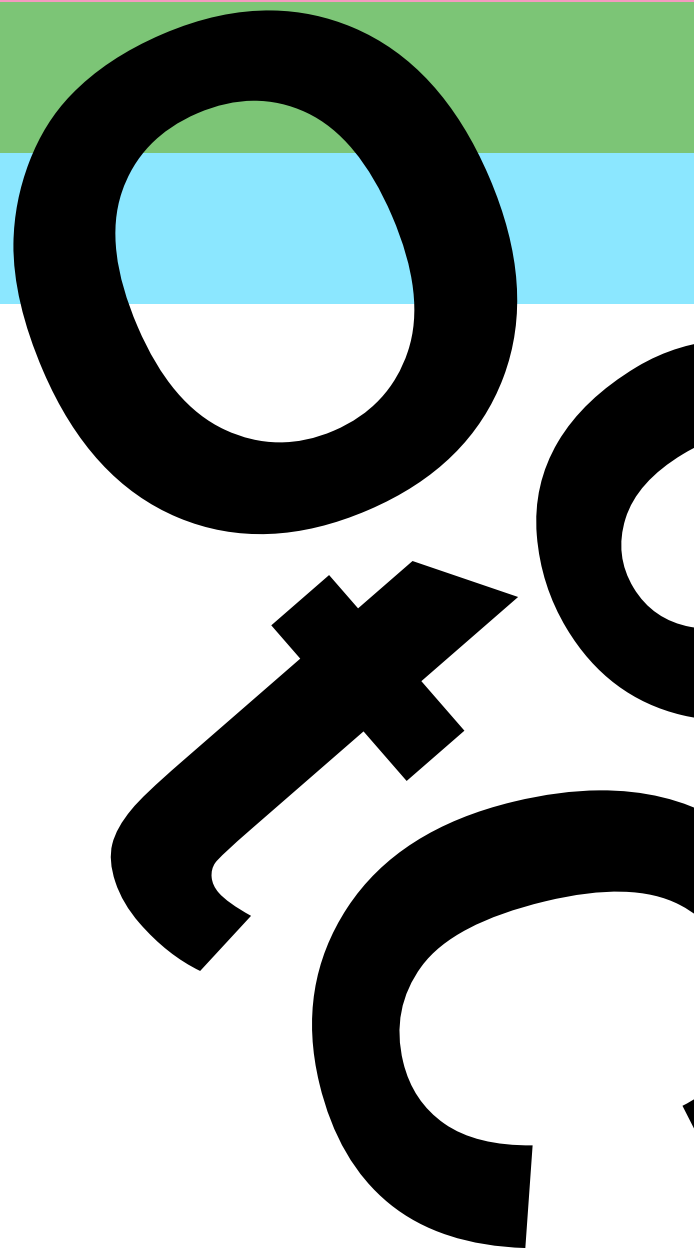
001
Investigation

Defining the rule: What *is* The Commissioner (all hail) anyway?



The Office of the Commissioner (all hail)

Document information

Defining the rule: What *is* The Commissioner (all hail) anyway?
Item 001*(v1.3)*

”Till fingers move and words be formed,
till ink doth drip and ribbon torn,
till stone is cracked and chisel blunt.
Blackjack 2 will be born.
I may be Max but I am not Value.
I am D. Value ”

1 Introduction

Across the history of Blackjack 2, and at time of writing, there have been 4 major revisions of The Rules. Each has improved it's reliability as the foundation of the collective gamespace. However, in version 4 of The Rules, there is no direct definition of what a "rule" is. This may seem circular, to define itself within itself, but a core concept of Blackjack 2 is the idea of rules as concrete, which is to say real. Both players, and Umpire, need to be able to look across the gamespace and point out each of the rules and what they mean as discrete elements.

The Rules define The Rulebook as "the metaphysical space defining the actions of all elements of Blackjack 2, including itself. It is usually linked to a physical totem (a notebook)." as well as this esoteric definition, it also implies that a rule is equivalent to a "modification to the rulebook".

In this investigation, I will be looking at Blackjack 2 at its very lowest level with the intention of defining the basic metaphysical elements of the game. My intention here is to lay a solid foundation upon which the rest of Blackjack 2 will sit, I am in no way trying to programmatically describe the game, nor can any of these described expressions actually be used within play. But by examining them closely, within the context of the game, I feel some further insight may be gleamed.

2 What should a rule do?

The purpose of a rule, as broadly as possible and within the context of Blackjack 2, is to apply limits to the gamespace. It does this with a transformation, acting upon the number of cards, the limit within which you are non-bust, the number of times you can pick up etc. In this way, a rule acts as a function, taking the gamespace as input and yielding a changed gamespace [1] . From this point on, think of rules purely as one-to-one functions.

The following is our first definition of a rule (R), defined in the λ- calculus:

$$RG_n \ \mapsto \ (\lambda x.\texttt{<expr.>})G_n \ \mapsto G_{n+1} \tag{1}$$

Where G is the representation of the gamespace. `<expr.>` represents a black-box, within which the body of the rule sits. Its important to remember that this is not an input, for any rule it is a real and calculable expression which has been left undefined for practical purposes.

This expression of R raises an interesting idea though, if the definition of a rule is a function that affects the gamespace, then does that not make players almost identical to rules?

2.1 Players as rules

With this definition of a rule in our toolkit, we can effectively describe the entire workings of a game of Blackjack 2. The rule is the foundations upon which all other elements are built and therefore any element can be described by them. This includes players, cards, the deal, a "win" etc.

In practice, you would struggle to formally notate any of these elements. This is because rules operate on many different levels of higher play, effecting anything from the metaphysics of the game to the real-world actions of the players [2] . To define anything in the real-world at such a low level is functionally impossible. So in reality, the expressions within functions R are black boxes, interpreted by the umpire.

In exactly the same way, the real-world actions of the players, their entire thought process and everything effecting this (in choosing their next action or devising a rule to be implemented) could be expressed within λ-calculus [3] , but it is not only impossible to do so, but also unhelpful.

This said these concepts and actions are not unknown, nor are they some kind of "input" into the gamespace. They are simply *undefined*.

[1] It should be noted that, according to version 4 of The Rules, the gamespace contains "all elements of Blackjack 2." This includes all players, the rule functions themselves and, theoretically, The Commissioner (all hail) itself.

[2] An exercise to the reader: attempt to define within λ-calculus the ruling "When a player picks up a King, the song We Like To Party (The Vengabus) by the Vengaboys."

[3] Non-determinism is outside of the scope of this investigation.

2.2 Rule-chaining, *or play*

But how exactly could rules be implemented? How do we describe the order in which rules are evaluated? This can be done very simply by implementing recursion:

$$RG_n \mapsto (\lambda x.\texttt{<expr.>})G_n \therefore RG_{n+1} \mapsto \ldots RG_{n+n_0} \tag{2}$$

$$R \equiv (\lambda x.Rx) \rightarrow RG_0 \mapsto R(R(R(...))) \tag{3}$$

As you can see, RG_n yields RG_{n+1}, which yields RG_{n+2} and so on. This expression is fundamental to Blackjack 2, entirely describing the mechanics through which the game is played, and is an accurate definition of what play is.

In this situation, R is not necessarily constant, and changes to shape play. For example, the first R function might return a gamespace where a player has an extra card as well as dictating that the next function R down is the rule that returns a gamespace where that same player is bust.

This works because of the nature of what a rule is, that is to say, a one-to-one function. The implications of this are that only one rule can be applied at once, meaning they can be effectively chained without internal inconsistencies.

Note that the second expression is an example that only applies if R is a function that simply returns its input applied to itself, in reality this situation is impossible, as described below.

2.3 What is the gamespace and where does it end?

The gamespace, in this interpretation, is defined as a function with predefined inputs containing any number of nested rules (function R). The gamespace can have any depth, including an infinite one, so may not yield anything.

Although it may look like it will nest endlessly, it will not. This is because of the property of rules to affect themselves. In reality it is possible for play to ”end” with a rule that yields no further rules [4] , such as the following:

$$R \equiv \lambda x.z \rightarrow (\lambda x.y)G \mapsto [G/x]y \mapsto y \tag{4}$$

In this way, G has a finite recursion depth and will always evaluate to y. Instead of seeing this as ”ending the game” it is more useful to see it as the simplest possible evaluation of any G.

But what is the most complex possible G? That is to say, what is G_0? This is simple, it is an evaluation of a function which takes a ”game” as input (in this case, blackjack). We will call this function C. Where for any input, C describes all possible gamespaces, G, and therefore the entirety of Blackjack 2.

C is The Commissioner (all hail)

3 The Commissioner (all hail)

The Commissioner (all hail) is, therefore, a function that can be described within λ-calculus. There are still, however, high-level complexities that are difficult to express.

Within the context of Blackjack 2, the mechanics of starting a game are as follows: Using C and the rules of blackjack, an umpire creates the initial gamespace, G_0; a predetermined sequence of nested rules that accounts for each possible choice that the players will make; the gamespace reduces in complexity over real-time as the number of functions left to evaluate drops to zero and eventually yields y.

Crucially, C is calculable. Should you ”know everything”, it would be trivial to evaluate each layer of C and therefore the order in which rules will ”happen”. Not to say that you must ”know everything” to calculate C, simply by playing Blackjack 2 we are, step-by-step, calculating one possible version of C. Each time we play, we compute the Commissioner itself (all hail), knowing fully that it will not yield anything.

[4] This rule is not ”introduced”, it is instead yielded by another function (representing a player) and exists as the terminus to G.

4 Conclusion

Within this investigation, we have adequately described not only play, the players and the concept of rules, but The Commissioner itself (all hail).

To reiterate the introduction, this is not for the purposes of describing the game programmatically, or calculating C (we do this through playing the game). It is purely as a foundation to build higher-level systems off of. With this in mind, I propose to the Office of the Commissioner (all hail) the following restructuring of the documentation concerning Blackjack 2.

- **The Game:** Describes the elements completely as shown in this document, this is Blackjack 2.
- **The Guide:** Sets out a coherent guideline for playing Blackjack 2, with emphasis that this is not a full definition of Blackjack 2. This would be done in a similar, or identical, way to the current set of ”rules”. The Game is not The Guide.

The use of the title ”The Rules” in current documentation, I believe to be needlessly confusing and inaccurate. I would personally advise against titling any further documentation the ”rulebook” or the ”rules”, risking confusion.

Inprint

Published by The Office of the Commissioner (all hail).
Designed by Goodnight Publishing.

For more information, see: `https://all-hail.co.uk`

Licence