

# Designing for Card Rarity

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## Introduction

One of BattleForge's most unique and defining features is that it is a real time strategy (RTS) game combined with a trading card game (TCG). Like all TCGs, different cards have different rarities. The fact that some cards are harder to come by provides an incentive for the player to continue paying, playing, or both. Before the original server shutdown BattleForge was in both categories, with its monetization scheme heavily encouraging the player to pump money into the game or face an incredibly steep mountain to gain any of the more expensive cards. Whether or not you paid, you also had to grind for tokens to upgrade your new cards. In order to drive player incentive to pay-in even more, some TCGs make cards with a higher rarity stronger in comparison to cards with a lower rarity. While such a practice, along with the practice of introducing filler rares and ultra-rares to dilute booster quality, isn't entirely missing from BattleForge, the original developers tended to tie rarity to the uniqueness of the card, with pure cards that function as "capstones" typically having the highest rarity and greatest uniqueness. Thus, if a player wanted to play Pure Shadow they would have access to unique cards like Harvester, Infect, and Shadow Worm, but would have to pay more money in the process. While this is true of the past, the question becomes, what about the future?

As the current Skylords Reborn Team has been redesigning old cards and creating new ones we have had to grapple with the place rarity holds in our plans. It can be tempting to want to add cool new abilities to every unit, but if common units begin sharing the uniqueness or complexity of ultra-rare units it would begin to make the rarity system arbitrary. If cards of all rarities are fundamentally the same, why have rarities at all? It is the goal of the SR Team to be faithful stewards of the game we have inherited, and we wish to stay as close to the spirit of BattleForge as possible. To do this, we have striven to understand the original intent of the game's systems and to achieve what the original developers could not do themselves due to a lack of resources. Consequently, this has led us to study the game closely in an attempt to develop a rating system by which we can determine how unique and/or complex a card of a given rarity is allowed to be and so properly maintain the distinction between rarities. We call this a card's complexity budget.

# I. Examining Rarities in Depth

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## Common

If we look at common cards, we see that they are simple in design (this document will assume Twilight Edition as the norm, which are the original 200 cards). Many have no abilities and the abilities they do have are simple and straightforward. Active abilities are either point-and-click without any external dependencies like Emberstrike's Fire Lance or mode-changes like the abilities of Tempest and Defenders. Probably the most complex common card from the Twilight Edition is Lifestealer. Lifestealer has an auto-attack that causes it to lose life points, a passive that regenerates life points, and an active that can be used to kill a unit and transfer its remaining life points to Lifestealer. Even here though we see that the design of Lifestealer is straightforward, and all of its abilities focus on a single idea. We can thus conclude that common cards should have a low complexity budget and revolve around a single mechanic.



## Uncommon

As we move on to uncommon cards, we begin to see more complex abilities that have conditional triggers, such as Lyrish Knight's Surge of Strength and the first root network units, as well as the introduction of global shrines like Fountain of Rebirth and Healing Gardens. With Furnace of Flesh and Voidstorm we get the first cards that interact with void power in a complex manner. There is also a shift from normal attacks to more complex attack patterns such as Frost Mage's conical attack, Vulcan's flamethrower, and Enforcer's charge. However, uncommon cards share many traits with common cards. Skyfire Drake has no ability, its only unique characteristic being a flying large T2 unit. Executor is uncommon yet has the same ability as the common Wrathblades. On the other side of the spectrum, we have cards like Unstable Demon which is a more complex version of its rare counterpart Ashbone Pyro. Outside of exceptions like Unstable Demon, we can see that the vast majority of uncommon cards have 1-2 abilities and/or a non-standard attack. These abilities are usually more complex than the abilities of common cards by requiring interactions with mechanics or other cards besides themselves. Even so, they are usually easy to understand. This tells us that uncommon cards should have at least one ability and that their abilities can include external dependencies but should not be overly complicated. Generally, they have a low to medium complexity budget.



## Rare

Examining rare cards, we start to see truly complex cards and cards with unique attributes. Mana Wing is the only T1 flying unit in the game and can teleport to friendly ground entities. Mind Control allows the player to takeover PvE units. Shadow Mage has the highest damage efficiency in the game coupled with several health mechanics and a built-in Nasty Surprise ability. Spawner units make their entrance with Cultist Master. Several

complex spells appear, with multi-input spells like Hurricane and Wildfire alongside multi-part spells such as Parasite and Plague.

Acute observers will notice outliers. Scythe Fiends are rare while having almost the same ability as the uncommon Burrower and Burrower even has a second ability. Fathom Lord's paralyze is a single-target CC in contrast to the common Swamp Drake's area-CC. It seems right to wonder if the original developers were constrained by the fact that they were producing 15 common, 15 uncommon, 15 rare, and 5 ultra-rare cards for each faction and were thus forced to squeeze some cards into places they didn't belong. Ignoring the worst offenders, we can see that rare cards regularly have complex mechanics, with multiple interactions and multi-phase effects. They are also capable of fulfilling multiple roles. Deepcoil Worm can become a tunnel entrance on top of being a standard combat unit. Rare cards can also be rare by virtue of being unique. Sunderer is a simple unit which could easily have been a common, except that it is the only L-sized T1 unit in the game. Overall, rare cards are unique, complex, or both, and have a medium to high complexity budget.

## Ultra-rare

Lastly, we have ultra-rare cards. At their best, ultra-rare cards are encapsulations of their faction's special attributes. They are unique and often beautiful cards, which provide the reason to play that faction. Enlightenment is the ultra-rare par excellence as it represents Nature's control over everything, even orb requirements. Infect takes Cultist Master's otherwise unique characteristic as a spawner in the Twilight Edition and applies it to enemies as a multi-part spell. Harvester is the only T2 XL-unit and the perfect conduit for Shadow's buffs, Firedancer represents Fire's siege expertise as a 50m range demolitionist. These are ultra-rares at their best. Unfortunately, we also have cards like Stronghold, which is a common card with a cool model. Yet even here we can charitably suppose that the original designers might have imagined that Stronghold would live up to its name and provide an unbreakable defense, a quintessential aspect of Frost. In sum, ultra-rare cards should be a unique instantiation of the elements they represent. Ultra-rare cards have a high complexity budget, are never T1, and can easily contain multiple abilities and synergize with unrelated game mechanics. Our recent rework of Dreadnought is an example of how an ultra-rare card should be designed.



## Markers of Complexity

Despite some incongruencies mentioned above we are able to derive patterns, several factors which the original developers used as a basis for determining a card's rarity. An ability's complexity can be divided into three categories, simple, advanced, and complex. Simple abilities have no external dependencies, meaning they work on their own, and if active are either button presses or simple mode-changes such as unit deals increased damage but is slowed. Advanced abilities can have external dependencies such as Resource Booster's well boosting and if they are active have two-stage effects or have persistent external effects. White Ranger's Home Defense and Scythe Fiend's Tunneling are examples of advanced abilities. Complex abilities require advanced knowledge of BattleForge's mechanics, have multi-stage effects, or

introduce additional entities onto the field. All spawning abilities, like Cultist Master's Nightcrawlers or Viridya's Treespirits are complex abilities. Disintegration is an example of a complex ability, as are Parasite's and Mind Control's mechanics. **Importantly, spells are different from units and buildings in terms of complexity budget.** Generally speaking, a spell is common if it has a simple ability, uncommon if it has an advanced ability, rare if it has a complex ability, and ultra-rare if it has a complex faction-defining ability.

Non-standard attacks such as cones or flamethrowers are a minor complexity factor, as shown by their absence among the original common cards. Spawn effects are minor complexity factors. Being large or extra-large (Harvester and Sunderer) is a complexity factor. Knockback and crowd control (single vs. multi-target) are complexity factors that scale downwards as the tier increases. For example, s-knockback is a major factor in T1 but entirely irrelevant in T4.

A worm's earth dive and other non-standard movement speeds are major complexity factors as evidenced by the fact that all worms are at least rare. Compare Fire Worm (rare) with Emberstrike (common). They have nearly the same abilities, with the difference being Fire Worm's earth dive. Global effects are a major complexity factor as evidenced by them missing from common cards and only being attached to simple effects for uncommon cards. Advanced or complex global (or semi-global) effects are all rare or higher, such as Comet Catcher and the void shrines. Finally, actives are slightly more complex than passives.





### Non-factors

In addition to passive and active abilities many units have attributes which do not contribute to a unit's complexity budget. These include movement attributes such as slow or swift, faction abilities like Bandits' lifestealer, and surrogate unit counters such as Tempest's increased damage to frozen-units or Firesworn's Slaying Giant's ability. The corpse gathering passive is an additional non-factor, as its complexity is factored into the corpse using ability itself. Except in cases where these attributes become so major that they become unique aspects of the unit, as is the case with Firedancer, attributes do not otherwise act as a complexity factor.



# II. Complexity Budget Factors

## Complexity Budget per Rarity

-  **Common:** 0 to 3 complexity points
-  **Uncommon:** 2 to 5 complexity points
-  **Rare:** 4 to 7 complexity points
-  **Ultra-rare:** 6 to 12 complexity points, faction defining



## Complexity Factors

### Ability Complexity:

- Simple: +1; No external dependencies, plain button press, point and-click targeting
- Advanced: +2; External dependencies, two-stage effects, persistent external effects
- Complex: +4; Require advanced game knowledge, multi-stage effects, spawn additional entities.

### Ability Type:

- Passive: +0
- Active: +1
- Mode-change: +1
- Non-standard auto-attack: +1
- Non-standard movement: +2
- Global effect: +2

Tier-based ability: (1/2 on actives, rounded down)	Tier 1	Tier 2	Tier 3	Tier 4
Single-target CC	+3	+2	+1	+1
Multi-target CC	+5	+3	+2	+1
S-knockback	+2	+1	+0	+0
M-knockback	+3	+2	+1	+0
L-knockback	+5	+3	+2	+2
XL-knockback	+10	+7	+5	+3
Unit size "Large"	+3	+1	+0	+0
Unit size "Extra Large"	X	+5	+2	+0
Flying	+4	+2	+0	+0

## Caveats

### 1. Existing Rarities

Some cards, especially in later editions due to the addition of affinities, have complexity budgets far exceeding their current rarity. Others are rare or ultra-rare but could easily be common or uncommon. Where possible we will make cards of higher rarity worth their rarity in terms of complexity while leaving cards of lower rarities untouched in terms of complexity unless the card is receiving a complete redesign. All future cards will be based on the complexity budget system developed here which is based on the Twilight Edition, as it represents the purest example of the original developer's vision. **We currently have no plans to change the rarities of existing cards.**

#### *Example:*

Necroblaster and Northland Drake are examples of complexity-creep. Both cards should either be uncommon or rare but are currently only common.

### 2. Deck Budget

A faction should not require a substantial amount of rares or ultra-rares to play it, regardless of their complexity, lest the faction become so expensive the average player cannot expect to procure all of the necessary cards in a reasonable timeframe.

#### *Example:*

Decks like Pure Frost already requires a large amount of expensive rares and ultra-rares to play and this is a factor we want to consider as we are designing new cards for the faction. Our goal in situations such as this is to be careful with the new cards we add so as not make the cost of entry into decks like Pure Frost so high new players won't bother pursuing the faction even if they are interested in it thematically.

### 3. Balancing

Existing cards which are subject to balance changes should be carefully changed as to not result in complexity creep. Yet, there are cases where a unit's defined identity cannot be realized without the addition of new abilities. When faced with the choice between leaving a unit as unviable but properly defined within its rarity and adding a new ability which would result in a higher complexity than proper to its rarity, balance should take priority.

#### *Example:*

Unstable Demon is already at the bounds of what an uncommon card can be allotted in terms of complexity. Yet right now the card is unviable in PvE and would be incredibly difficult to make truly viable in PvP. As such, the balance team decided to introduce a new ability which fits with the unit's identity even though it would make the unit too complex for an uncommon card.

### 4. Upper Limit

The upper limit of a unit's complexity is constrained not only by its complexity budget but also by the number of different abilities it



possesses. Generally speaking, 2 active abilities plus one additional effect, such as non-standard auto-attack, represents the maximum amount of complexity a unit should have, even if more were allowable via the complexity budget. Adding too many abilities unnecessarily complicates a card, causing issues with its identity while increasing the difficulty of balancing it. Additionally, each card can only display four abilities.

*Example:*

Cards like Corsair and Deepcoil Worm have so many abilities they are no longer displayable on the card itself. Lost Grigori has 3 active abilities when counting its faction ability and all 3 are actively used in PvP. This has contributed to the fact that Grigori has been strong since its release and its complexity has made it difficult to determine which aspects of it should be changed to achieve balance.

## 5. Intangibles

The complexity budget system is a good measure for how complex a card of a given rare ought to be. Even so, despite all attempts to incorporate all possible objective criteria, the system still cannot account for several factors which we call intangibles. Some cards, like Unstable Demon, have several overlapping mechanics which are simple enough individually, but which grow increasingly more complex as they interact with each other. Some cards can seem easy to understand in theory but are difficult to utilize in practice, most notably in cards with multiple active abilities, each of which increases the card's total complexity in a manner which is difficult to gauge. Other cards have their rarities justified less on their actual complexity and more on their uniqueness or their status as thematic paragons of the factions they represent.

*Example:*

Harvester has a massive complexity score of 12 which derives almost entirely from the fact that it is an XL-unit in T2. Yet, when compared to a card like Shadow Mage, Harvester is relatively simple in comparison. On the other extreme is Firedancer whose rarity is entirely justified by her being a perfect encapsulation of one of Fire's core faction characteristics even though she is an incredibly simple unit.



# III. Examples – Calculating Complexity

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## Common Cards (units):

### Northguards

No abilities.

*Total complexity score = 0.*

Northguards is the perfect example of a basic common card.



### Lifestealer

S-knockback (T1): +2

Non-standard auto-attack: +1

Simple Passive (Still Alive): +1

Simple Active (Sacrifice): +2

*Total complexity score = 6*

Given its complexity, Lifestealer should really be an uncommon card. Even though it has enough points to also potentially be a rare card, it lacks sufficiently complex mechanics to qualify for that rarity. The issue is that Shadow cards are generally more complex than cards from other factions and the original developers wanted to give each faction 2 common buildings, 1 uncommon building, and 1 rare building in T1. This left Lifestealer as a common card given it feels like a better fit for common than both Phase Tower and Embalmer's Shrine.

### Emberstrike

Simple Passive (Fiery Birth): +1

Simple Active (Fire Lance): +2

*Total complexity score = 3*

Emberstrike is a good example of how much complexity is allowed for a common card.

## Uncommon Cards (units):



### Enforcer

Advanced Passive (Charge): +2

*Total complexity score = 2*

Enforcer is among the simplest of uncommon cards and denotes the lower bounds of complexity for this rarity.



## Thornbark

Nonstandard auto-attack: +1  
Mode-change (root): +1  
Complex Passive (Linked Fire): +4  
*Total complexity score = 6*

Root Network units are the upper bounds of complexity for uncommon cards and straddle the line between uncommon and rare. In terms of complexity there is no difference between Spikeroot, Thornbark, Razorleaf, or Spore Launcher. Two of these are uncommon and the other two are rare. Units like these are a good example of how permeable the dividing lines can be between rarities. It is also a good lesson that complexity budgets are always general guidelines and not strict rules that determine where a particular card should be placed.

## Rare Cards (units):

### Sunderer

S-knockback (T1): +2  
Simple Active: +2  
L-unit (T1): +3  
*Total complexity score = 7*

It is easy to see that the majority (5/7) of Sunderer's complexity budget comes from the fact that it is a L-unit in T1. This is directly because of its size (+3) and indirectly because all melee L-units have s-knockback (+2). Yet Sunderer is a simple unit and isn't appreciably different from Tremor who is common. Still, an L-sized unit in T1 is indeed "rare", in fact its currently unique, and so fits the bill of being a rare card.

### Shadow Mage

M-knockback (T2): +2  
Non-standard auto-attack: +1  
Simple Active (Sacrifice): +2  
Advanced Active (Foul Play): +3  
*Total complexity score = 8*

Shadow Mage is a very complex unit which sits at the upper bounds of what is acceptably complex for any kind of card, including ultra-rare cards. One of the only other units in the game to match Shadow Mage in complexity is Lost Grigori who is also a rare card. Unsurprisingly, both of these cards are more complex than the majority of ultra-rares.



## Ultra-Rare Cards (units):

### Firedancer

S-knockback (T2): +1

Non-standard auto-attack (50m range): +1

*Total complexity score = 2*

Firedancer is the simplest of ultra-rares cards. In some sense Firestalker, its T2 siege counterpart, has a more complex design than Firedancer. And yet, no one would think of swapping them or say that Firedancer doesn't deserve her designation. Why? Because even though Firedancer's individual mechanics are simple, taken all together she is a very unique and iconic unit which encapsulates the very identity of Fire. There is an additional lesson here, ultra-rares don't need to be complex, but they need to be worthy. Firedancer is definitely worthy.



### Mountaineer (original):

M-knockback (T2): +2

L-unit (T2): + 1

Complex Passive (Glacier Shield): +4

*Total complexity score = 7*

Mountaineer is an example of a complex ultra-rare unit. He provides a reason to pick up a Frost orb in T2, fits Frost's theme perfectly, and has a complex passively generated Ice Shield. Mountaineer serves as a guidepost for the direction in which underwhelming ultra-rare cards should be changed.

## Buildings

The complexity budget system portrayed here is designed to be used with units. As-is it can currently hint at the rarity a building should occupy but it will not correctly calculate the rarity of most buildings. The Faction Design team is currently working on a tower design document and during the process we intend to polish the building complexity budget system. After it is complete, we will release an updated version of this design document.

## Spells

As mentioned above, spells have a different system of complexity than units or buildings. Generally, a spell is common if it has a simple ability, uncommon if it has an advanced ability, rare if it has a complex ability, and ultra-rare if it has a complex faction-defining ability. Eruption is a good example of a common card, Maelstrom of an uncommon card, Plague of a rare card, and Enlightenment of an ultra-rare card. Yet the difference between a common and a rare card differs wildly between the four primary factions. It is more accurate to say that a spell's rarity is more a reflection of how complex it is in comparison to the other spells within its own faction. For example, Undead Army is a common card but could easily have

been a rare in a different faction. The issue is that the original developers wanted the same number of cards of each type being released for each faction. This resulted in 4 common, 4 uncommon, 4 rare, and 1 ultra-rare spells, for a total of 13, being released for each of Fire, Frost, Nature, and Shadow. So, while Undead Army could have been a rare card in another faction, it could not be a rare card within Shadow, because Shadow already had a substantial amount of other equally or more complex cards. Within the Twilight edition there is a clear hierarchy of complexity as regards the spells of a given faction.

1. **Shadow** – most complex spells, several of Shadow’s common and uncommon spells would be rare spells in Fire or Frost.
2. **Nature** – second most complex spells. The only truly simple spell out of the original Nature spells is Surge of Light. All other spells qualify for uncommon or above. Two uncommon Nature spells, Noxious Cloud and Thunderstorm, are as complex as rare cards such as Inferno, Earthshaker, Area Ice Shield, and Home Soil.
3. **Fire** – second least complex spells. Most Fire spells are very straightforward, with Backlash, Wildfire, and Bloodthirst being the only complex Fire spells in Twilight Edition. Later editions regularly released more complex Fire cards.
4. **Frost** – the least complex spells. Frost’s ultra-rare spell, Frost Shard, is less complex than Maelstrom which itself qualifies as an uncommon card. Ice Tornado is probably the most complex Frost spell, while the other 3 rare spells (Home Soil, Area Ice Shield, and Ward of the North) would have been uncommon cards at best in Nature or Shadow.

## Closing Remarks

A major reason for analyzing a game's underlying design is to infer standards from existing content. Understanding the design can also act as a guide for introducing future content. We think that the system described here provides us a good tool in guiding our design decisions moving forward. Twilight Edition released with 200 total cards, 100 of which were units. When applying the complexity budget system retroactively to all 100 units, 70 of them fit directly into the system. Out of the remaining 30, only 10 do not adhere to the complexity budget system in any way. The other 20 are nearly all rare and ultra-rare cards which can have their divergence from their rarity’s complexity budget explained in much the same way that Firedancer’s divergence is explained; they are simple cards whose adherence to their faction’s core characteristics justify them as worthy of being rare and ultra-rare.



We hope you have enjoyed this look into BattleForge’s rarity system, and we also hope it will help us all to be on the same page in the future as we continue to move the game forward together.

The Skylords Reborn Team