Tier Lists: Definitions, Examples, and Comments

1. Introduction

In these writings are definitions, examples, and comments concerning tier lists. Some details involve mathematical terminology which are given for the sake of completion and brevity, but the reader can skip these moments without missing much. The substantive parts of these writings are the definitions, categorization of tier lists, and critique of tier lists.

2. Definitions

Game Object - Any specifiable structure or phenomenon in either a video game's code or the execution of a video game program together with any inputs (game pad, voice, motion, etc.).

Domain - A finite collection of game objects.

Ranking - An ordered paritition of the names of game objects from a domain.

Categories - Categories are the elements of a partition of the partitions in a ranking. Given any two names from a category, name A and name B, it must not be the case that there is some name outside that category that is less than name A and greater than name B. The categories can be labeled.

Informal Criteria - Statements of an ambiguous nature which plausibly exclude some rankings from a domain.

Formal Criteria - Statements of a precise nature which not all rankings from a given domain satisfy.

Tier List - A ranking with either no criteria, informal criteria, or formal criteria given, and in which any criteria concern the same domain as the ranking does. Categories may be provided.

3. Counting Rankings

For information about the number of possible rankings of a domain with n game objects, search for ordered Bell numbers. I provide the number of possible rankings consisting of 1, 2, 3, 4, and 5 names below:

1, 3, 13, 75, and 541.

4. Five Kinds of Tier Lists

Plain Tier List - A tier list with no criteria given for its ranking.

Dialectic Tier List - A tier list with informal criteria for its ranking.

Relaxed Tier List - A tier list with formal criteria in which two or more rankings are compatible with those criteria.

Rigid Tier List - A tier list with formal criteria for its ranking such that there is only one ranking compatible with the criteria, and where that ranking is either known or can be feasibly determined.

Complex Tier List - A tier list with formal criteria for its ranking such that there is only one ranking compatible with the criteria, and where that ranking is unknown and cannot be feasibly determined.

Every tier list falls into exactly one of these categories. The distinction between rigid and complex tier lists is informal in nature, and one could argue that a complex tier list could become a rigid tier list if some new method is discovered or applied to determine its uniquely specified ranking.

5. Four Examples

I will use Faster Than Light as the video game for the coming examples, and with hard mode assumed. This video game contains 28 different ships that can be ranked against each other. Gameplay involves weighing risks and benefits to make decisions about how to navigate the world map, upgrade your ship, deal with events, and battle enemy ships.

Example 1 - Plain Tier List

This is my ship tier list, let me know what you think.

(List of 28 Ships Here)

Explanation: This tier list is provided with no context. Typical reactions are comments such as, "I agree with most of this list but would definitely put Zoltan A above the Engi A."

Example 2 - Dialectic Tier List

This is my ship tier list based on which ships are the most well-rounded in the hands of a skilled player. Well-roundedness is defined as the capacity of a ship to become powerful despite different early game outcomes.

(List of 28 Ships Here)

Explanation: This tier list has informal criteria given which the author attempts to explain to the reader. The exact meaning of well-roundedness is unclear, yet it still conveys an idea that can elicit discussion and debate. There might be comments such as, "I don't think the Kestrel A should be above the Kestrel B. The Kestrel B's four basic lasers can be combined with other weapons in a lot of different ways to make a powerful ship, while the Kestrel A has good options but not as many."

Example 3 - Rigid Tier List

This is my ship tier list based on the total scrap cost of each ship.

(List of 28 Ships Here)

Explanation: The total scrap cost of each ship is something that can be readily calculated, and there's only one possible ordering that satisfies the criteria given. There are often comments such as, "The Kestrel C is the lowest ship on your tier list, but it's definitely not the worst ship in the game. I don't think total scrap cost is a good measure of how good a ship is."

Example 4 - Complex Tier List

This is my ship tier list based on the probability each ship has of a victorious run with perfect play.

(List of 28 Ships Here)

Explanation: A clear criteria is given for which there is only one possible ordering of ships that make sense. While the concept of perfect play is not explained, it's meaning can be inferred in an exact way. It means play in which every action, subject to future uncertainty, maximizes chances of success. Perfect play assumes a knowledge of all game mechanics but not of any insights predicting RNG outcomes. While it's sometimes possible to know that a given pair of ships should be ordered in a certain way, it's not feasible to do this for every pair of ships. There might be comments on a tier list like this such as, "Once you get better with the Engi B you will see that it wins more reliably than the Stealth B. Almost all of the most skilled players feel that their chances of winning with the Engi B are better."

6. Some Limitations of Tier Lists

Providing a universal condition for how "complete" a tier list is for a given domain and video game is difficult. The idea is that the tier list is complete for some ranking purpose if it captures everything about the domain that is implicitly meant to be captured. It's easy to give examples of situations in which tier lists seem to be complete and situations in which they clearly are not. Tier lists with formal criteria are always appropriate for their purpose in the sense that their purpose is already rigorously stated in their criteria, but might still fail to capture some idea.

Tier lists are often not complete for fighting game characters due to the common existence of rock-paper-scissors relationships between different characters. An object more complete yet more unwieldly than a tier list would be a "tier matrix" in which every match-up is given an integer rating for how favored one character is over another. If only integers $0, \pm 1$ are allowed then the tier matrix simply states which character has the advantage, if any. A property of the tier matrix would be that if the matchup (x, y) is given a rating a, then (y, x) would be given a rating $-a$. Another approach might be to use a tier list based on match-up win percentages and mixed strategies. For an example, see Tekken 7.

Tier lists are sometimes not complete for characters in RPG games. Sometimes a character is very good early on, but becomes worse later on. Short of some platonic belief in the "goodness of a character," this presents the problem that a ranking of the characters would seem to fail to address the way most players approach a game. Should the character that is very good early on be put high in the ranking, low, or in the middle? Any possible choice would miss the mark for an unaware player. The way to use the character would be to utilize them when they are the most worth it, and then stop using them in favor of a better option at some point. In this situation a tier list could instead be used for the domain of progression strategies. For an example, see Fire Emblem: Shadow Dragon.

Tier lists can also fail to be complete if it's possible for a player to utilize multiple game objects from the tier list's domain. Think of a scenario in which the player forms a team of characters with which to take on challenges in the game. There are often factors such as character synergies, character incompatibilities,

and character niche uses. Maybe one character is weak in most situations, but very powerful in a particular situation. If the size of the team permits, then it might make sense to include this character on a team. If some characters have varying strengths and weaknesses for different areas of the game, as is often the case, then a tier list will fail to capture such complexity if its domain is simply characters. The situation could be worsened if duplicates of characters are allowed, since the utility of the character might depend on how many are used. If the domain is expanded to teams then perhaps the tier list is complete again, but there are usually too many possible teams for a readable tier list with that domain. For an example, see Darkest Dungeon.

A more abstract point is that a tier list can only provide so much information. The amount of information associated with a ranking involving n names is approximately $\log_2(n!/(2(\ln 2)^{n+1}))$, or simply $\log_2 n! \approx n \log_2 n - n \log_2 e$ if no two names have a tied ranking. If some information is trying to be captured by a tier list, but the tier list cannot possibly provide that information, then the tier list is not complete. An example of this often comes from RPG games with lengthy stories and multiple characters that could be used. If the information sought is which characters to use at which points of the game, then a simple tier list of the characters might not have the possibility of providing enough information to answer that question.

7. Closing Comments

Overall tier lists have significant limitations and, in my observations, are overutilized. Beyond that the plain tier list and informal tier list are used far more compared to tier lists with formal criteria, which actually have the capacity to be very interesting or on-point (as in the case of the Faster Than Light complex tier list example). My recommendation is to try different kinds of mathematical objects for comparing game objects with each other, as the rankings found in tier lists seem to be the de facto default even when it's inferior to another option. Complex tier lists can also be very interesting when the right criteria are conceived of, but seem comparatively rare amongst the kinds of tier lists I've seen. Tier lists without criteria suffer from having no context for why their ranking is given. Lastly there should be less misuse of the word "objective" when discussing dialectic tier lists. I've seen many tier list debates become very heated when the criteria for the tier list are ambiguous. The occasional notion that there is some "platonic ranking" for game objects in a game should also be questioned. If there were formal criteria to capture this "platonic ranking," then it would just be the proper ranking for one kind of criteria. It seems that the idea that "good" has a platonic meaning in the context of some kind of tier list sometimes obscures the fact that really the criteria for those tier lists have significant ambiguity.