

ANEXO A

Tablas proyecto *Meeple Like Us*

Table 1 Visual Accessibility

[Meeple Centred Design: A Heuristic Toolkit for Evaluating the Accessibility of Tabletop Games](#)

Choice of colours	Colour choice is an important consideration for those impacted by colour-blindness, and it is often the case that games will make use of colour palettes that are inaccessible to those with Protanopia, Deuteranopia or Tritanopia. These problems may exist in the form of player token choices, the board state itself, coloured cards, or in tracking score. There will often be 'accessible combinations' of tokens that can be used when dealing with lower player counts, but overlaps in the palette when dealing with larger numbers
Contrast	Contrast represents a significant issue for those with visual impairments, and ensuring effective contrast should be observed at all times in the game. We would traditionally expect a minimum colour ratio of 4.5:1 for normal sized text and 3:1 for text of font size 14 or higher, as per the Web Content Accessibility Guidelines (World Wide Web Consortium 2008)
Font choice	Fonts should ideally be chosen for readability, with a minimum of ornamentation. For maximum readability fonts should be bold, and make use of italics or ALLCAPS.
Tactility of tokens	Often, games provide tokens which are impossible to differentiate by touch—they may have many tokens of the same form factor permitting only visual differentiation. We recommend that games adopt the same principles for tactile differentiation that is in common usage for coinage (Schillmeier 2007)
Binocularity	Some games require the ability to differentiate based on distance and perspective. These games are often dexterity based titles, and as such it's not easy to offer generalised compensatory guidance
Paper money	Paper money is almost uniformly inaccessible in board games, lacking as it does even the slim tactile differentiation that real paper currency offers. The usual compensatory regimes for those with visual impairments (such as the folding method (Schillmeier 2007)) are rarely appropriate when dealing with games. The rapidity through which currency may be circulated and the sums of money involved do not scale well to these techniques. Avoiding paper money is best, and if a game makes use of it we tend to recommend players adopt some other form of tracking wealth such as poker chips, matchsticks, or even actual money
Non standard dice	Visually impaired gamers will often have invested in replacement dice. These may be over-sized, or even have their faces represented in braille. Dice of these kinds exist in all flavours, including the game specific varieties such as four, eight, ten, twelve and twenty sided dice. However, when a game includes non-standard dice faces as part of its provision, it's necessary for gamers to develop their own lookup tables before play begins. Providing these lookup tables for players can ease this transition although there will usually be a significant impact on flow of play until the tables are memorised

Indicative teardowns that show the impact of visual impairments on games may be found on Meeple Like Us—specifically the games Dixit; Lords of Waterdeep; Tales of the Arabian Nights and Galaxy Trucker. Examples of good design for visual accessibility may be seen in the teardowns for Patchwork, Paperback, Lanterns, and Splendor

Table 2 Cognitive Accessibility

[Meeple Centred Design: A Heuristic Toolkit for Evaluating the Accessibility of Tabletop Games](#)

Reading level required	We work on the assumption that there is no need for a player to read the manual for the game—that they will have the rules explained to them by a knowledgeable party. However, the amount of text required on cards in play, and the complexity of the instructions on them must be taken into account
Game state complexity	Meaningful play in board games depends on evaluating a game state and making decisions based on the existing state to change it to a more desirable state. The complexity of a game will determine the cognitive costs needed to play. It's not intended that this be resolved down to a numerical value, such as 'equivalent mental age', since this is neither useful nor respectful
Memory requirements	Most modern games do a good job of limiting the need for significant burden on memory. They allow for discarded cards to be examined at any time, provide cheat sheets that show key rule outcomes, remind players of their available actions, and so on. However, some games require players to hold certain elements of the game state in their head in order to make informed decisions for the future. We must be mindful of how much is required of a player if a game is to be cognitively accessible
Game flow	The consistency of game flow is an important element of learnability. Some games have a common structure that can be relied upon. Others have a turn order, and even turn composition, that may vary widely depending on what has happened within the game. Players may miss turns, or go several times in a row, or play may be executed in reverse order, or any combination of these. The more malleable the game flow is, the greater the cognitive burden that goes into understanding what is going on
Number of token combinations	Many games make use of cardboard, paper or plastic tokens to represent certain elements of game state. They may represent a player presence on a board, the availability of a particular resource, the scoring implications of a certain action, and so on. The more of these of which a game makes use, the greater the memory burden
Synergy of rules	It is a common trait of many games to offer rules synergy, which refers to the degree to which particular rules within the game amplify, or nullify, other rules. These may include simple synergies such as 'If you have played card X, then card Y is at double strength', or more complex chains such as 'With card A in play, it means that card B is at half

	strength, which means that card C prevents card B from destroying card D, which means...'. The more synergistic combinations of rules that exist, the more cognitively expensive the game is to understand and play
Scoring	Some games make use of complex scoring regimes that are designed to obscure the status of winning players until the end. This is designed to make sure that no-one feels disheartened by game progress. The more obfuscated and deferred these scoring systems may be, the more cognitively expensive it is for players to assess what their sensible actions are for current play
General knowledge/trivia	Some games are dependent on a degree of historical or general knowledge to support play. They may implicitly make use of cultural references, rely on others to understand geopolitical context, or need players to be able to answer questions of trivia. Such games place significant burdens on both recall and recognition, which can impose significant burdens on both fluid and crystallised intelligence
Multitasking	Many games require players to keep track of many competing goals and systems, and how those systems may act in concert to bring about a particular goal. The extent to which this is required plays a significant role in influencing cognitive accessibility

Relevant teardowns considering this category of cognitive accessibility may be found on Meeple Like Us. Specifically, Pandemic; Concordia; Dominion, Once Upon a Time, the X-Wing Miniatures Game; Star Fluxx; and Suburbia

Table 3 Emotional Accessibility

[Meeple Centred Design: A Heuristic Toolkit for Evaluating the Accessibility of Tabletop Games](#)

Challenge	Much of the enjoyment of a game for many players comes from the mastery of a challenge, perhaps after multiple failures. However, challenge goes hand in hand with frustration (Juul 2009) and if the challenge of a game is too high it may end up being an issue
Despair	Several modern games adhere to the form sometimes known as 'despair generators'—they are designed to offer extremely high challenge with the expectation of failure. The fun comes from simply enjoying the way that failure unfolds. However, it can often be hard to convince anyone that an embarrassing loss was actually fun, and this has to be taken into account
Arbitrary fates	Games work best for many players when they represent largely controllable systems—the extent to which a player is responsible for their own fate can be a powerful trigger for emotional upset. High degrees of randomness, or being set up with an unwinnable game state can impact on this. However, this is highly dependent on individual

	response. Some may find that it helps being able to dismiss a loss as being the luck of the draw. Others may interpret a loss that they themselves engineered as a reflection their own capabilities, and spiral accordingly
Bluffing/lying	Many games involve a degree of bluff or outright lying– often through misleading other players as to their game state, or actively hinting at intentions for play which are false. For those with certain emotional conditions, it can be difficult to read the players around them and difficult to effectively manage this element of the gameplay
Need for closure/symmetry	Some games will introduce a new game state on a turn by turn basis, or have a game structure that heavily implies an expectation of completion that cannot actually be achieved. Players may be able to ‘finish’ a task, but be penalised in gameplay terms for the attempt. This can exacerbate conditions such as OCD
‘Take That’ mechanics	A common element of a certain category of game is the ‘take that’ mechanic. This is a player action that can be performed after another player has taken their action, with the intention of countermanding it. The availability of such mechanisms is usually secret and highly conditional, and can significantly derail a player’s strategy. The presence of such mechanics, and the gameplay weight associated, is an important element to consider in terms of the overall emotional impact of the game
Upsetting themes	There are many family games that exist, but just as many with ‘mature’ themes aimed at older gamers. Some games may make free reference to modern illegality or immorality, or reference particularly problematic elements of geopolitical context such as slavery. Some games may require players to act against type in playing, which can be an upsetting experience if there is no opportunity to avoid it. Such games may not be appropriate for families, or those with incompatible moral codes, regardless of the age rating on the box
Score disparity	The extent to which a player ‘loses’ is an important consideration in terms of how emotionally damaging a loss may be. If a player loses by a couple of points, it can be a case of simply congratulating someone on their win. If the win is by several hundred points, it’s often hard for players to interpret that as anything other than a sign of their own stupidity. The extent to which a game enables large score disparities must be considered in this category
Player elimination	Some games allow for players to be knocked out of play, meaning they have to watch everyone else have fun until the game ends. This can understandably feel like exclusion, and exacerbate emotional upset
‘Ganging up’	When a player develops an early lead in a multi-player, competitive game it makes sense from a game theory perspective for other players to focus negative attention upon the leader. The extent to which a game permits, or perhaps even encourages, ganging up on a single player is going to have a significant impact on the emotional suitability of the game

Relevant teardowns for this category include Star Fluxx; Galaxy Trucker; Merchants and Marauders; Tales of the Arabian Nights; Lords of Waterdeep; Pandemic; Patchwork; and Cards Against Humanity

Table 4 Physical Accessibility

[Meeple Centred Design: A Heuristic Toolkit for Evaluating the Accessibility of Tabletop Games](#)

Size of cards	Some games make use of unconventional card forms, either extra-large or extra-small. Card manipulation of any kind may be difficult for those with physical impairments, but these non-standard cards can be especially difficult to work with
Token shape	The degree to which tokens in the game permit easy manipulation is an important element of physical accessibility that must be taken into account. Tokens that are entirely smooth or rounded or are small and difficult to manipulate are going to cause problems for those with physical accessibility considerations. And often, with everyone else
Regularity of piece manipulation	The number of times a physical interaction is required is going to be a compounding factor on interaction difficulties. That which may be possible on an incidental basis may offer accessibility barriers if it must be repeated several times per minute. This includes moving tokens, shuffling cards, and interacting with shared communal game elements
Ease of communicating instructions	Where there is a barrier to direct interaction with a game state, a substitute can be for impaired players to issue instructions verbally. How effective this is though depends on the ease of referring to particular areas of the game state and the extent to which the judgement of another player will come into executing the instruction
Physical acting	Some games, the most obvious of which is Charades, require a degree of physical acting or physicality of game state. Depending on the nature of this physical acting, it may render the game inaccessible to certain groups of players. Other games include the assumption of ability in the instructions, such as 'indicate that you are a spy by holding up your thumb'
Paper money	Just as paper money is a problem for those with visual impairments, it is an interaction barrier in terms of physical accessibility. Paper money is more difficult to manipulate than other forms of currency representation, and this can be a problem for everyone, not just those with physical impairments
Number of tokens	The busyness of a game board is going to be a significant determining factor in how easily physical manipulation can be handled. If working with lots of tokens in a small region of the board, even relatively minor physical impairments may get in the way of effective play through knocking other pieces out of their original configuration

Size of game board elements	The size of the 'target zone' of board manipulation is a powerful indicator of physical accessibility. If it's small, then the precision of physical dexterity required to place tokens where they should go is going to be significantly increased. If it is large, or does not require fine positioning within constraints, the requirements are considerably reduced
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Relevant teardowns include Galaxy Trucker; Patchwork; the X-Wing Miniatures Game; Survive: Escape from Atlantis; and Ticket to Ride: Europe

Table 5 Communicative accessibility

[Meeple Centred Design: A Heuristic Toolkit for Evaluating the Accessibility of Tabletop Games](#)

Reading level	Some games make heavy use of complex text to handle contextual instructions, whereas others can be played without reference to any written content. The extent to which the game can be understood in its deployment language is an important communication consideration
Audibility	Few games have explicit audio components, but some of them do exist—these sounds normally originate from an external source such as a CD or digital app. The nature of these audio signals, and the extent to which the information they convey is indicated elsewhere, determines the suitability of the game for those with hearing impairments. This element of the lens also tends to be an issue in games where large amounts of strategy or narrative must be communicated between members of a group
Lying/bluffing	Much of the lying and bluffing in games is based on confidence, verbal fluency, and body language. For those with impairments in any of those categories, the need to bluff or ascertain bluffing in others may be very limited. Similarly, the need to bluff may put considerable pressure or stress on those that do not feel comfortable with taking on the role
Communication of strategy	Numerous modern games adopt a co-operative style in which all players work together to accomplish a common goal. For these games, the difficulty tends to be very high to compensate for the lack of direct player competition. As such there may be a need to communicate complex, precise strategy in a context for which there may not be a lot of real-world analogues. This may also require a degree of advocacy, where the originator of a plan must defend its suitability in the face of queries, critiques, or alternative proposals
Need for audible communications	Some games require players to express non-trivial sounds in order to communicate game state or game intention. Where these could not be easily translated into written text, a visual communication language, or relayed by a supporting player, these need to be taken into account. For example, if communication must be kept secret it might not be appropriate to consider sign-language as an appropriate way of dealing with the requirement

Relevant teardowns include *Once Upon a Time*; *Tales of the Arabian Nights*; *Pandemic* and *Sentinels of the Multiverse*

Table 6 Socioeconomic Accessibility

[Meeple Centred Design: A Heuristic Toolkit for Evaluating the Accessibility of Tabletop Games](#)

Inclusive artwork	We take into account how inclusive the artwork for a game is, paying attention to gender balance and where appropriate the balance of appropriate ethnicities. Some games have a theme that would naturally preclude an inclusive roster, but for many we assess whether any given person could look at the game and think 'I can see people like me represented on the box, so this is a game for people like me'
Sexism in art and instruction	Games have long been considered a hobby 'for the boys' and as such certain games tend to play into the common stereotype of pitching themselves at presumed straight men. This comes through in art choice, manual wording, colour assignments, and occasionally in an assumption of masculinity in the game manuals. We assess games for the extent to which they make use of these gendered, cisnormative and heteronormative assumptions
Theme	The theme of certain games can be extremely challenging, and may include considerable portions which may be considered upsetting or triggering. Where games are likely to include these elements, we outline them and the extent to which they are core to the game experience. In this, we don't judge games for including this kind of content. In fact, we enjoy many of these games ourselves. We seek only to ensure that it is appropriately documented so that others can consider whether the game is suitable for its intended deployment
Player counts	One of the more meaningful things that must be taken into account here is 'cost per player', which will be important for those on a budget looking to maximise the benefit they get out of a game. Low player counts may not allow for all members of a group to play, whereas high player counts may make it difficult to bring to the table with enough people to make it worthwhile. The extent to which games scale up and down in terms of enjoyment to player count is also a consideration here
Cost	Board games are not particularly cheap, and when budget is a consideration it's important that people feel they are getting something worth the money. Board gaming is widely considered to be a 'luxury hobby', and as such the cost of the game rarely has any direct relationship to the quality of the gameplay. Some games too have an expectation of further investment—that you are in essence putting a down-payment on a larger investment in the hobby

Relevant teardowns include *Lords of Waterdeep*; *The X-Wing Miniatures Game*; *Tales of the Arabian Nights*; and *Sentinels of the Multiverse*

Table 7 Intersectional Accessibility

From: [Meeple Centred Design: A Heuristic Toolkit for Evaluating the Accessibility of Tabletop Games](#)

<i>Physical/cognitive</i>	
Size of Cards/hands	It might be possible for a player to hold a hand of cards easily, or possible to easily understand all the cards in their hand. When neither of these are possible it can create a difficult situation for working out what options a player may have available to them
Board complexity	Many complex boards can be understood easily by those with only physical impairments, and those with cognitive impairments may be able to move around the board to inspect particular elements in isolation to temporarily limit complexity. This may not be possible when these impairments combine
Dice	Randomness creates a cognitive burden as a result of expanding the state of possible outcomes. Dice also cause a physical accessibility issue when it comes to rolling them. When these compound, it can lead to situations where there is a disconnect between the numbers that came up and why they led to the outcome
Hidden hands	The ability to manage hidden hands of card information can be frustrated by this intersectional category, since getting assistance from another player may reveal secret game state information in the process
Agency	We believe that accessibility of games requires more than simple 'observer' status or having someone make moves on your behalf. The extent to which physical and cognitive impairments intersect for a given game will impact on this
<i>Emotional/cognitive</i>	
Downtime	Downtime between turns can make it difficult to keep attention focused, and it can also create situations of cognitive burden as players try to work out what's going to happen on their own turn. If it turns out that something horrible is coming their way, the delay as they watch it make its way around the table can also be emotionally upsetting
Competition	Competition is a healthy part of many games, but it depends on the ability of each player to be able to emotionally or cognitively deal with the consequences
<i>Physical/visual</i>	
Token size	Many games require not only manipulation of tokens, but also the ability to perceive them in context on the game board
Placement of tokens	The extent to which pieces can be placed in context will depend on the size of the 'target area'
Board size	The larger a board is, the more it becomes necessary to incorporate a degree of physical movement into examining it. When physical and visual impairments intersect, this may not be possible

<i>Cognitive/visual</i>	
Aesthetics	The aesthetics of the game, and the jargon implied by those aesthetics, can make instructions and outcomes difficult to read. This can significantly increase the cognitive cost of comprehending the game rules
Symbolism	The use of symbols on cards can act as an effective, and even perhaps readable, shorthand for complex concepts. However, remembering and interpreting symbols can place a significant burden on cognitive processes
<i>Physical/communicative</i>	
Communicated instructions	Many games are playable with physical impairments if you are prepared to let another player make moves on your behalf. That's not possible if you cannot communicate your intention to the other player
<i>All</i>	
Time constraints	Time constraints on player actions never take into account compensatory regimes that may be involved in making a title accessible. This can create frustration or stress if such limits are strictly observed. If they are more flexible, experimenting with time limits may significantly impact on game balance
Ability to drop in/out	All impairments exist on a spectrum, and the position an individual may occupy on that spectrum may change day to day and hour to hour. The extent to which a game permits someone to drop out of play without impacting everyone else is an important aspect of accessibility
Length of game sessions	Some games may last many hours, which is a window of engagement that is large enough to impact upon any number and combination of impairments. The longer a game is, the more likely it is to exacerbate physical, emotional, or cognitive discomfort