

ClaG: A classification system for plays and games in toy libraries and libraries*

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ABSTRACT

The paper presents ClaG, a novel classification system for plays and games created for the Archivio Italiano del Gioco (AIG) [Italian Games Archive], Udine, Italy. The primary goal of the classification system is to serve as a practical tool for highlighting the characteristics of a game that are useful for the selection, research, identification, and delivery of a game, or a set of games, to a player or group of players using a game library or a library with a game collection. This objective guided all the decisions in its construction. The identification of the main relevant concepts was based on a twofold approach: a top-down strategy, by the identification of general concepts from specialized literature on play and game, and a bottom-up strategy, involving the recursive application and modification of these concepts to classify a set of 200 games (mainly table and board games). The paper elucidates the five fundamental concepts that underpin the construction of this classification: space, materials, setting, game outcome, and genre and provides a comprehensive overview of the classification system. To evaluate the classification system's effectiveness, it was presented twice to a panel of experts who appreciated it and offered suggestions for improvement. The results indicate that the resulting classes are very small, each containing only a few items. Finally, the paper discusses prospects for the future development and use of the classification system.

KEYWORDS

Play; Game; Classification schema; Taxonomy; ClaG.

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1. Introduction

In 2017, the Archivio Italiano del Gioco (AIG) [Italian Games Archive] was established in Udine. This documentation center of ludic culture is dedicated to the collection, preservation, study, research, and enhancement of the cultural and social heritage represented by games. Currently, the AIG houses a collection of approximately 2,800 board games and over 700 publications, some of which are still awaiting cataloging. The game collection developed by AIG requires both physical organization and a practical arrangement for the use and study of games. Additionally, the main lines of action for AIG include the collection, cataloging, and classification of games (primarily board games) and toys, the organization and management of a specialized library on games and toys, game design, education, animation, pedagogy, and the publication of works on play and games.¹

At AIG, a list of terms was created to aid in tagging games within the OPAC by Dario De Tofoli. However, this list fell short of being an appropriate and systematic classification. In fact, it was characterized by “words or terms identifying concepts [...] simply juxtaposed one after the other” (Gnoli 2020, 49), without both a notation and any definition or guidance for each concept and group of concepts, resulting in a rudimentary *array* that was very difficult to implement and entirely unsuitable for the organization of a physical collection.

A primary goal of the developed research was to identify an effective classification system for managing the game collection at AIG. Consequently, a study group on play and game classification was established in autumn 2022 to develop a classification proposal for play and games in toy libraries and libraries. This paper presents that proposal.

The proposed classification system aims to be a practical tool for highlighting the characteristics of a game that are useful for the selection, research, identification, and delivery of a game, or a set of games, to a player or group of players using a game library or a library with a game collection. One of the most important scholars of bibliographic classification of our times responds in this way to the question of what the purpose of bibliographic classification is: “It is to arrange books in a helpful sequence, or, rather, to mechanise the arrangement of books in a helpful sequence. It is also to help mechanise the correct replacing of books returned after use. Again, it is to help fix the most helpful place for a newly added book among those that are already in a library” (Ranganathan 1959, 7). If, in this quotation, the term “book” is replaced with the term “game”, the purpose and limitations of this classification system are fully clarified. Furthermore, the goal of the classification system must be defined: the games of the collection are to be arranged for use by the *players*. Finally, such a classification system should be based on a set of principles, among which exclusiveness² is very important for the goal of arranging games effectively.

¹ The other lines of action of AIG can be summarized as follows: Production of a complete and updated Italian list of game production (ludography) and publications (bibliography) on games; Study and research on local ludic traditions; Training aimed at educators, teachers, and parents; Use of games as a tool for inclusion; Organization of meetings and public events for the dissemination of gaming; Promotion of contacts and exchanges with similar local, national, and international institutions.

² The canon of exclusiveness is defined by S.R. Ranganathan as follows: “According to this canon, no entity comprised in the immediate universe can belong to more than one class of the array. In other words, no two classes of the array can overlap or have an entity in common. To secure this, the classes of an array should be derived from its immediate universe on the basis of one and only one characteristic” (Ranganathan 1967, 160).

The primary goal of the classification system is to adopt the player's perspective. The idealized scenario for this classification involves one or more children who want to play, meeting either outside, in a library, or in a toy library. The choice of game will depend on several concurrent factors: the weather (e.g., is it too cold or too hot to play outside?), the available space, the resources at hand (e.g., a ball or a deck of cards), the number of participants (am I alone, are there two of us, or are there enough to form teams?), their age, and the type of game desired (e.g., a physical or intellectual challenge, a simple pastime, a simulation, or an abstract game).

2. A brief review of literature on play and game and their classification

The literature on games is vast, and reconstructing the landscape of publications in this disciplinary area goes beyond the scope of this work and certainly requires a long and in-depth dedicated study. As an illustrative example, it is noted here that there are numerous general bibliographies on games (*Bibliography on Play* 1931; Daiken 1950; Whittaker 2012; Ludica 2021), and there are also some dedicated specifically to the educational function of games (Centre for games & Learning 2016; Robert Gillespie Academic Skills Centre 2019). Furthermore, specialized bibliographies on computer games (Carter 2002), video games, and their educational function (Tavinor 2023; LudoScience 2016) are increasingly common in recent times. There are also specialized bibliographies on particular types of games, such as card games (Horr 1892; Lensi 1892; Hargrave 1930) and puzzle games (Danesi 2001). However, when attempting to delve into the review of bibliographies on individual games, such as chess or football, the quantity of sources is so vast that it becomes impractical to proceed even by examples.

As expected, the literature on game classification is extensive too, beginning with Roger Caillois, who discusses it in a specific article (Caillois 1955) and in his classic text *Les Jeux et Les Hommes* in the chapter titled "Classification of Games" (Caillois 1958). Additionally, E.S. Duke's work (1986) on the categorization of educational materials for nursing training contributed to this field.

The true development of interest in game classification arose with the advent of video games, as evidenced by the work of Damien et al. (2007; Doherty et al. 2018). There is also a growing interest in serious games (Botte, Matera, and Sponsiello 2009; Rego, Moreira, and Reis 2010; Barca et al. 2012; De Lope and Medina-Medina 2017; Paliokas and Sylaiou 2019; Zuo et al. 2019) and in learning through gaming (Jantke 2010; Bedwell et al. 2012; Sandham 2015). Finally, a significant trend in studies about games is focused on game design and mechanics and their classification (Crawford 2000; Salen and Zimmerman 2004; 2006; Adams 2014; Bertolo and Mariani 2014; Schell 2020).

The difficulties encountered in the classification of games are numerous and stem from at least two main factors: the lack of a universally accepted definition of "game" and the richness of perspectives that can be adopted as criteria for defining categories to organize plays and games.

Regarding the first issue, Salen and Zimmerman (2004, 73–80) undertake a careful, interesting, and analytical comparison of definitions of games provided by prominent game scholars such as Johann Huizinga (1950), Roger Caillois (1958), Avedon and Sutton-Smith (1971), Clark C. Abt (1987), Bernard Suits (1990), David Parlett (1999), Chris Crawford (2000), and Greg Costikyan.³

³ The definition of Greg Costikyan cited by Salen and Zimmerman in Chapter 7, page 8, could not be located in the source referenced. Please refer to (Costikyan 2002).

They offer a highly beneficial comparison table delineating pertinent characteristics of games considered by each definition. However, Salen and Zimmerman's own definition of a game, which is referenced below, highlights a set of particularly intriguing attributes, thus serving as the foundational framework for implementation within this classification system.

Regarding the difficulties encountered in game classification, Roger Caillois, after noting that Johann Huizinga completely avoids addressing the problem (Caillois 1955, 62–63), masterfully describes them: “The vast number and infinite variety of games initially lead to despair in finding a principle of classification that allows them to be divided into a limited number of well-defined categories. Moreover, they present such different aspects that authorized perspectives are numerous” (Caillois [1958] 2017, 27). The significant challenges encountered not only in the design phase of a game classification but also in the application of an existing classification have been highlighted on the ESAR website: “The persons responsible for a toy and toy material lending service (toy lending library) must be able to classify a large number of unusual objects. The methods of classification used to arrange such a collection are usually defined through an intuitive process deprived of a theoretic framework; their use often becomes subjective”.⁴

Before developing a completely new game classification system, the AIG undertook an assessment of existing classifications, including both bibliographic and generalist schemes, as well as specialized ones. However, as observed by Salem and Shehata (2022, 470) “despite the increasing number of video game collections in libraries, the literature that focuses on the classification of non-printed materials such as video games in Library of Congress classification and DDC is scarce.”

Existing bibliographic classifications have demonstrated inadequacy in achieving the objective of organizing games in a useful sequence. This inadequacy stems from two primary shortcomings: first, the limited number of available classes, which forces the assignment of identical classification numbers to a multitude of games, thereby reducing the clarity and efficacy of general classification systems for specialized games collections. Second, the criteria used to delineate classes lack mutual exclusiveness and linearity. For instance, in Dewey Decimal Classification (DDC) *Skill games* have notation 794, whereas *Games involving cards* have notation 795.4 and *Skill games involving cards* have notation 795.41, revealing the inherent inconsistency of the DDC. Furthermore, nearly any game requires some kind of skills, and which one is the skill can be a critical factor in the decision to play a game, as demonstrated by the ESAR classification.

ESAR is the most significant and renowned specialized classification of games: “the classification and analysis of collections of playing materials using the ESAR System is a[n] original six faceted system”.⁵

The ESAR acronym denotes the four primary types of play: E = Exercise play, S = Symbolic play, A = Assembly (or Construction), and R = Games with Rules. Despite ESAR's foundation on six comprehensive facets, its initial division reveals a potential overlap between types A and R, as illustrated by construction games that entail adherence to rules, thereby potentially belonging to both categories. For instance, *Jenga*, a construction game, necessitates players to adhere to rules governing turn-taking. Indeed, games inherently entail rules, implicit or explicit, essential for defining the temporal and spatial dimension of gameplay (the magic circle; see section 4.1).

⁴ <https://systeme-esar.org/english/>.

⁵ <https://systeme-esar.org/english/>.

The non-exclusivity of ESAR classification is evident in its application examples found online, such as:

- *Big Pirate*, on ESAR web site,⁶ belongs to the following classes:
 - R- 403 ou R-03 – Jeu de circuit et de parcours [Circuit and Pathway Games]
 - A 406 Jeu de stratégie [Strategy Games]
 - A 407 Jeu de hasard [Games of chance]
 - B 4 HABILETÉS COGNITIVES (B 408 Relations spatiales, B 410 Coordonnées simples, B 411 Raisonnement concret) [B-408 Spatial Relations, B-410 Simple Coordinates, B-411 Concrete Reasoning];
 - C 3 HABILETÉS FONCTIONNELLES (C 302 Discrimination visuelle, C 315 Orientation spatiale) [C-302 Visual Discrimination, C-315 Spatial Orientation];
 - D 3 TYPES D'ACTIVITÉS SOCIALES (D 301 Jeu compétitif, D 302 Jeu compétitif et coopératif) [D-301 Competitive Play, D-302 Competitive and Cooperative Play];
 - E 2 HABILETÉS LANGAGIÈRES (E 205 Discours expressif) [E-205 Expressive Discourse];

Thus, ESAR lacks a single classification value for each facet and fails to provide rules for a unique notation capable of encompassing all pertinent game characteristics. Furthermore, ESAR's objective differs significantly from that of the present classification system, focusing on psychological analyses and children's developmental perspectives rather than organizing game collections for player use. Finally, the ESAR system appears to overlook classes for other types of games, such as those rooted in *ilinx* (or vertigo) according to Roger Caillois' renowned classification.

Therefore, ESAR proves unsuitable for organizing physical game collections, as it does not align with the objectives and scope of the classification system outlined in this paper.

COL, Classement des Objets Ludiques, is another specialized classification created by the Centre National de Formation aux Métiers du Jeu et du Jouet (FM2J) in Lyon.⁷ It is based on four main classes (jeu d'exercice, jeu symbolique, jeu de règle, jeu d'assemblage) which correspond exactly to the four main classes of the ESAR Classification. However, the subclasses of COL represent a significant simplification or reduction of the subclasses in ESAR.

3. Methods and materials

The design of the classification system began with the identification of the main relevant concepts using a twofold approach: a top-down strategy, starting “from very general concepts and [dividing] them into more specific ones,” and a bottom-up strategy, working with “more specific concepts and [trying] to organize them from the bottom up into increasingly general classes” (Gnoli 2020, 26–27).

The top-down strategy was based on play and game literature. This included classical authors such as Huizinga and Caillois, together with manuals for the game design (Salen and Zimmerman 2006; Bjork and Holopainen 2006; Adams 2014; Bertolo and Mariani 2014; Schell 2020),

⁶ <https://systeme-esar.org/analyses-de-jeux/>.

⁷ The authors thank Marcin Trzmielewski for the valuable suggestion.

and general and specialized encyclopedias and dictionaries (Dossena 2009; Angiolino and Sidoti 2010; Sciarra 2018; Angiolino 2022) were investigated to find out most relevant concepts for the essence of play and game. Moreover, for each concept, a clear and useful definition was identified. During this process, it became evident that many sources showed a lack of attention to the clear identification of major concepts.

The bottom-up strategy was based on the analysis of more than 200 games (mainly table and board games) and the identification of relevant characteristics for their classification, on the basis of their self-definition (e.g. description on the box), their rules manual, their box content and, sometime, of the simulation of a game, or a hand of a game.

During this phase, a draft of the classification system was created and refined through a series of iterative attempts, which suggested adjustments and revisions. Several game experts⁸ participated in this phase, testing the initial version of the classification system and offering valuable suggestions for its improvement.

3.1 Defining play, game, and toy

According to this classification system, play is a natural, free, and spontaneous activity, pursued for its own sake, characterized by implicit or explicit rules, confined within spatial and temporal boundaries, with an uncertain outcome, and fictitious in nature. This definition is broad enough to encompass all the types of games defined by Caillois: competitive games (agon), games of chance (alea), mimicry games, and vertigo games.

An important distinction adopted in this classification pertains to the different meaning of the English terms “play” and “game” (which cannot be expressed by the Italian word ‘gioco’). For instance, Adams distinguishes between:

- *Play*: “Nonessential human activities that are usually, but not always, recreational as well. One of the four key elements of a game” (Adams 2014, 518);
- *Game*: “A type of play activity conducted in the context of a pretended reality in which participant(s) try to achieve at least one arbitrary, nontrivial goal by acting in accordance with rules” (Adams 2014, 510).

Furthermore, Adams observes that the game is competitive, and competition is defined as “a form of play in which players are trying to achieve mutually exclusive goals” (Adams 2014, 504).

As a synthesis of the definitions of game by many foremost authors, the definition proposed by Salen and Zimmerman was a fundamental starting point for the design of the classification system: “A game is a system in which players engage in an artificial conflict, defined by rules, that results in a quantifiable outcome [...] it applies to all kinds of games, from computer and video games to parlor games and sports.” (Salen e Zimmerman 2003, 80).

⁸ The examples were developed through the collaboration and assistance of several experts, whom we sincerely thank: Giulia Gasparini (Cooperativa Accento – Multiplo di Cavriago), Jean Pierre Paschetta and Roberta Olivero (Associazione R.E.S.P.I.R.O. – Bra), and Olga Verrengia (Cooperativa Guarnerio d’Artegna – Biblioteca Civica “Vincenzo Joppi” di Udine). Their application of an initial version of the classification and the challenges they identified in this process were crucial for the improvement of the classification system, which was initially provided in a preliminary and necessarily provisional form.

In addition to “play” and “game,” there is a third term of interest for this classification: the toy. It does not indicate an activity like the two previous terms but rather a category of material for playing. The toy is “an object intended for children’s play activity, even in a context devoid of explicit rules, such as dolls, stuffed animals, and toy trains” (Angiolino and Sidoti 2010, 449). The toy is not defined as an object in itself but in relation to its use in competitive or imitative play. It is on this basis that Dossena specifies that a toy is a “play tool, an object that serves children for playing, therefore a tool for child’s play. For example, a ball is a toy, if playing ball is a game for children; the football is not a toy, if playing football is a game for boys or adults or, more than a game, it is a sport: and certainly the football is not a plaything” (Dossena 2009, 701). So, in both the excerpts, the term “children” does not strictly refer to the age of the players but rather to the manner in which the play activity is conducted.

In this classification system, therefore, toys are to be classified as a kind of material intended for *mimicry* play (see below).

4. From the definition of game to the main categories

Salen and Zimmerman’s definition of game highlights a series of features that have proven very useful for the design and will be beneficial for the use of this classification, even if it evidently applies to the concept of “game” rather than “play”. In it, several fundamental concepts underpin the construction of this classification can be found: space, materials, setting, game outcome, genre, and age.

4.1 Space

A fundamental concept is that of “artificiality” in games; this means that “games maintain a boundary from so-called ‘real life’ in both time and space. Although games obviously occur within the real world, artificiality is one of their defining features” (Salen and Zimmerman 2004, 80). Therefore, a fundamental characteristic of a game is the “artificial space” within which it takes place: the *magic circle*. The term magic circle was “coined originally by Johan Huizinga to refer to physical locations in which special social rules of behavior apply. Subsequently adopted by the game industry and other fictional media as follows: the magic circle is a theoretical concept related to the act of pretending that occurs when we choose to play a game. When we begin to play and agree to abide by the rules, we enter the magic circle. Within the magic circle, actions that would be meaningless in the real world take on meaning in the context of the game” (Adams 2014, 515). However, Adams notes that “theoreticians of play have since adopted the term magic circle to refer to the mental universe established when a player pretends” (Adams 2014, 4).

The playing ground is the field: “The term ‘playing field’ is sometimes used to refer to the playing space, especially in action games, games involving movement, or sports-related games. However, it is also used for other games where there is no board and where it is necessary to define an area: this applies, for example, to various paper and pencil games and three-dimensional war-games” (Angiolino and Sidoti 2010, 193).

The first main category of this classification system assumes as characteristic of derivation the *position of the player* inside or outside the artificial space. This characteristic is compliant with the *canon of consistency*⁹ suggested by Ranganathan. Examples from *Schedule 1 Space* include:

- Play without a precisely defined space (mainly traditional children's games);
- Play with real-scale play-ground (mainly sports);
- Play with reduced-scale play-ground (mainly board games);
- Play with imaginative play-ground (e.g. some videogames).

4.2 Materials

The reference to “artificiality” in Salen and Zimmerman’s definition, suggests that the physical objects that enable the development of the conflict are also artificial: many games require specific “materials” to be played (e.g. specific balls, cards, tokens, pieces, etc.). The availability of these “materials” is a *condition sine qua non* for playing a game.

Material is a “term indicating the set of all objects necessary to play a game. In a specific game, materials may or may not be present and can be anything. Based on them, useful classifications can be made: hence, we have board games, card games, tile games, video games, paper and pencil games, marble games, games with figurines, and so on” (Angiolino and Sidoti 2010, 604).

For this reason, materials are the second main category of this classification system. Examples from *Schedule 2 Materials* include:

- Games without materials
- Ball games
- Card games
- Dice games
- Tile games
- Paper and pencil games
- Toys¹⁰

4.3 Setting

Artificiality also implies another fundamental aspect of games, which is their ability to simulate or mimic reality. According to Giampaolo Dossena, simulation is “the act of simulating, that is, pretending, making it seem that there is something that actually is not there; of determining a fictional situation; of imitating; of instrumentally reproducing a natural process or a complex situation, or some of its characteristics” (Dossena 2009, 1408).

A particular setting could be the main relevant characteristic in the choice of a certain game, e.g. by a teacher interested in educating by playing. From this point of view, there are games that are completely abstract from reality (such as *Jenga*) and games that are characterized by a setting

⁹ To secure homogeneity among the classes of an array, the canon of consistency requires to “use one and the same characteristic to derive an array of co-ordinate classes from a universe.” (Ranganathan 1959, 38).

¹⁰ For the difference between toys and other kind of materials, see section 3.1.

that refers, in a more or less strict form, to phenomena in reality (such as *Monopoly*, *Subbuteo*, or *RisiKo!*, or “playing cowboys”).

A setting is defined as the “theme of the game, evoked by the materials and the rules” (Angiolino and Sidoti 2010, 36). So, thematic and non-thematic games are provided by the classification system. Non-thematic games are “those in which no setting is present: for example, *Scrabble*, *Checkers*, and *Tetris*, where letters, pieces, and geometric shapes are moved or arranged in similarly geometric spaces” (Angiolino and Sidoti 2010, 70). A game is considered thematic if it is possible to clearly identify a specific theme or subject. For example, the classic *Dobble* is non-thematic because, although it contains figures, it does not correspond to any specific theme or subject. In contrast, *Dobble Harry Potter* is thematic because it is associated with a specific subject (Harry Potter). The setting of games is a particularly significant aspect, as it forms the basis for the potential selection of a game to leverage its recognized educational component. This is not only because, for example, a Memory® game featuring images of insects can be used to convey entomological knowledge and information through play. It is also because Bruner, Jolly, and Silva have pointed out that “playing is a way of learning within a ‘controlled’ situation where the risks of violating social rules are minimized, providing an opportunity to experiment with new behaviors” (Mazzetta et al. 2022, 26).

In simulation games, the mechanisms find similarity with those of real life or an imaginative work. According to Angiolino and Sidoti, these are “those that have a strong setting and rules aimed at reproducing the mechanisms [of the simulated reality or game] as faithfully as possible” (Angiolino and Sidoti 2010, 972). For example, Angiolino and Sidoti cite *The Campaign for North Africa* and *Sim City*. Consequently, the third main category of this classification system is the setting. *Schedule 3 Setting* consists of the following array:

- Thematic games
- Non thematic games
- Simulation games

4.4 Game outcome

Salen and Zimmerman’s definition also mentions conflict as another intrinsic characteristic of games, which must result in an outcome dependent on a quantifiable result. According to the authors, “games have quantifiable objectives or outcomes. At the conclusion of a game, a player has won or lost or received some kind of numerical result. A quantifiable result is what typically distinguishes a game from less formal entertainment activities” (Salen and Zimmerman 2004, 80). Engelstein and Shalev highlight that “the first choice that designers make about a game is the game’s basic structure. Who wins? Who loses? What is the overall scope of the game experience? Will it be just one game or perhaps a series of hands?” (Engelstein and Shalev 2022, 1). Moreover, knowing who wins or loses is a fundamental point for the choice and initiation of a game because it is closely related to the number of players available to play at the time of the choice and to their will to engage in a competition: if one is alone, one must choose a solitary game; if there are two, there are not enough players to play a team game, etc. Also, a quantifiable result is a characteristic useful to distinguish game from “less formal entertainment activities”, that in the present classification schemes are mimicry or vertigo *plays*. However, this classification system also addresses plays, ludic activities which are non-competitive activities that do not necessarily involve a winner or a loser.

So, *Schedule 4 Game outcome* consists of the following array:

- Solitaire
- Single winner
- Single winning team
- Cooperative
- Semi-cooperative
- Single loser
- No winner (mainly for mimicry and vertigo).

4.5 Genre

Salen and Zimmerman's definition proved very useful to find out four out of five main characteristics of the classification system, but was limited to games in its scope. At least one more characteristic was needed to classify plays different from games (i.e. competitive plays). As seen, the classification of games is widespread; however, there are a number of widely recognized genres that depend on the manner or abilities with which players engage.¹¹

In his attempt to find out a general principle to classify game genres, Caillois emphasizes that it makes no sense “to contrast card games with dexterity games, nor social games with Olympic games. In one case, the criterion for subdivision is the tool of the game; in another, the main quality it requires; in a third, the number of players and the atmosphere of the match; and in the last, the location where the contest is held.” (Caillois [1958] 2017, 27). While all these characteristics are undoubtedly relevant for characterizing a game, they highlight aspects of the game that can be mixed together. For instance, there are social games that are also card games, or outdoor games that are also dexterity games, etc. The importance of these characteristics, evident from the fact that they give rise to traditional game categories—such as card games, social games, etc.—is also recognized by this classification system: some of these characteristics are expressed through facets that precede the genre (i.e., space, materials, setting, outcome), based on characteristics that are capable to give rise to mutually exclusive categories.

The identification of possible game genres in this classification must also employ a principle that makes the obtained categories mutually exclusive, a principle derived from Caillois' classification work: the player's attitude towards the game. Based on this principle, the primary genres identified by Caillois's classical proposal (Caillois [1958] 2017, 28–45) are the following: *agon*, *alea*, *mimicry*, and *vertigo*. They are briefly defined and described below.

The genre of *agonistic games* represents games with the objective of winning the competition, which motivates each player and can be achieved by employing one's abilities at the best. The effort involves utilizing all available resources, which may be material (for example, those provided at the start of the game, such as money in *Monopoly* or cards in a card game) as well as personal skills (e.g., physical, mnemonic, linguistic, social, or logical-mathematical abilities). Furthermore,

¹¹ In a work dedicated to the classification of core mechanics, Ernest Adams identifies the following categories as game genres: skill, resource management, race, strategy, social interaction, and information games (Adams 2014, 352–53). However, these categories are somewhat spurious because they sometimes refer to player characteristics (e.g. skill) and other times to game mechanics (e.g. resource management).

in competitive games, which are fundamentally challenge-based, the player or players compete in one or more skills with the implicit goal of declaring the best player the winner for that particular attribute (e.g., strength, endurance, dexterity, intuition, logic, speed, memory, etc.). According to Thi Nguyen, “when we play, we take on temporary agencies, temporary sets of skills and constraints, and temporary goals” (Nguyen 2023, 17); this philosopher of play heavily draws on the insights of Bernard Suits, who posits that playing is “the exercise of skills within clearly defined goals” (Nguyen 2023, 22).

For these reason, agonistic games are classified based on the skills required of the player, which form the foundation of the game’s underlying challenge. This category includes word and storytelling games, mathematical games, logic and deduction games, dexterity games, mazes and puzzles, bluffing games, and more. To identify the various types of skills, it is highly beneficial to refer to the multiple intelligences theorized by Howard Gardner in *Frames of Mind: The Theory of Multiple Intelligences*. According to Gardner, “an intelligence is the ability to solve problems, or to create products, that are valued within one or more cultural settings” (Gardner 1987, 10). This definition of intelligence is notably applicable to both real-world situations and the fictional scenarios created within the magic circle of a game. Examples from agonistic games in *Schedule 5 Genres* include:

- Skill games
 - Language games (linguistic intelligence)
 - Word games
 - Storytelling games
 - Puzzles (logical-mathematical intelligence)
 - Logic games
 - Math games
 - Deduction games
 - Abduction games
 - Dexterity games (physical intelligence)
 - Strength games
 - Balance games
 - Coordination games
 - Speed games
 - Endurance games
- Etc.

The *canon of currency* suggested by Ranganathan was adopted to choose the main name of the isolates of this array, instead of the name of the Gardner’s intelligences.

The genre of *alea games*, which includes *gambling games*, encompasses “all games that are based on a decision not influenced by the player and over which they have no control; games where the goal is not to defeat an opponent but rather to triumph over fate” (Caillois [1958] 2017, 33). As Caillois notes, gambling games (such as those found in gambling dens, casinos, races, lotteries, and combat sports) are distinct from other games in that they are not devoid of material interests. Gambling is a “recreational activity aimed at profit, where winning or losing is predominantly determined by chance, with skill playing a negligible role” (‘Giòco d’azzardo’ 2024).

The genre of *mimicry games* includes those in which the play “does not involve developing an activity or experiencing a fate in an imaginary context, but rather becoming an illusory character and behaving accordingly [...] mimicry and disguise are thus the complementary springs of this category of games”(Caillois [1958] 2017, 36, 38). There is one aspect that distinguishes mimicry games from all others: “With one exception, mimicry shares all the characteristics of play: freedom, convention, suspension of reality, and a defined space and time. However, it lacks the continuous subjection to imperative and precise rules, which are instead replaced by [...] the dissimulation of reality and the simulation of another reality” (Caillois [1958] 2017, 40).

The genre of *vertigo games* includes “those that are based on the pursuit of vertigo and consist of an attempt to momentarily destroy the stability of perception and to subject lucid consciousness to a sort of voluptuous panic. In all cases, it involves accessing a kind of spasm, trance, or bewilderment that annihilates reality with dizzying speed” (Caillois [1958] 2017, 40). Examples of vertigo-inducing games include playground equipment such as swings and zip lines, as well as extreme sports like mountain climbing, skydiving, hang gliding, and so on.

4.6 Age

The facet Age was not initially considered in the proposal of classification tested by expert and discussed at the seminars (see section 6) for two reasons: first, age-related data can be easily obtained from the game’s packaging and instructions; second, the indication of an appropriate playing age is always somewhat arbitrary, as players develop different skills at different, subjective rates. For instance, what is the exact age to start playing chess, bridge or hide and seek? Nonetheless, during the two public seminars presenting the classification proposal, participants expressed the opinion that age was an important factor in game selection (particularly members of the Working Group on Gaming in Libraries-IGD Italy of the Italian Library Association). As the classification system is mainly a practical tool, it was necessary to take into account a practical aspect highlighted by participants. Since the indication of a player’s age is largely arbitrary and subjective, it was determined that the classifier should assign the value of this facet based on the information provided by well-established and known international websites, such as BoardGameGeek. In the classification system, the table for the Age facet is provided as an example. Based on these examples, notations suitable for any requirement can be created.

Age	Notation
Any age	+
From 18 months	+18m
From 2 years	+2
From 2 to 5 years	+2-5
etc.	

5. Overview of the classification system

Due to the length restrictions imposed on articles published in this journal, it is not possible to fully reproduce and publish the classification system, nor even just its complete tables. Therefore,

a general overview of the classification system and its various parts is provided below, along with some examples of its application.

The current version of the classification system consists of five parts, four of which have been published in a limited edition by Bianchini and Munini (2024): 1. the Classification Rules; 2. the Classification Tables; 3. a Glossary; 4. Classification Examples. Additionally, there is an Excel© file that allows for the interactive use of the tables for the semi-automatic creation of the classification numbers for the games.

In this version of the classification system, the focus is on board games. Traditional children's games, sports, mimicry games (symbolic or role-playing games), and video games have not yet been thoroughly addressed or classified. As shown above, just the main and general classes for these games have been provided, with detailed subdivisions expected to be developed in future versions.

The Classification Rules (Part 1) were organized into five chapters, corresponding to the original main categories: 1. Space, 2. Materials, 3. Setting, 4. Game Outcome, and 5. Genre. The Age chapter will be added in the first complete edition of the ClaG.

Classification Rules provide an explanation of the development of the classification itself and a guide to using the Tables, through:

- Definitions of each specific aspect (e.g., space, materials, setting, etc.);
- Definitions for accurately interpreting and assigning values to a game for each specific aspect, especially for values that are not immediately intuitive or could be ambiguous without sufficient clarification; for example, for the distinction between games without a defined play-ground and board games. For instance, some board games may be played by individual players and by teams: a rule in *Schedule 4 game outcome* clarifies that such games belong under “Single winner” and not to “Single team winners”;
- In addition to the value definitions, examples of games that hold a particular value for a given facet are included.

For example, in the Part 1, the criterion to class a play or a game with respect to the playing space is given: “The criterion for distinguishing a game based on the playing space—for example, a traditional outdoor game, a sport, or a board game—is the player’s position relative to the play-ground. Specifically, it considers whether the player participates in ‘first person’ (as in *Prison Ball* or *High Jump*, which can be played outdoors or indoors) or remains ‘external’ to the playing area (as in board games or video games). Thus, for example, billiards, table football (foosball), pinball, table tennis (or ping-pong), and Subbuteo are classified as board games” (Bianchini and Munini 2024, 17).

The Classification Tables (Part 2) list all the available values for each of the five aspects, with their symbol of notation and classes name. For example, based on the general criterion of the player’s position relative to the play-ground, the *Space table* given in Part 2 of the classification system is the following:

1. Play without a precisely defined space
3. Play with real-scale play-ground
31. Real-scale ground on terrain
33. Real-scale ground in water
35. Real-scale ground on ice

- 37. Real-scale ground in air
- 5. Play with reduced-scale play-ground
- 51. Board games without additional support
- 53. Board games with a game board
- 55. Board games with panels
- 57. Board games with special table
- 7. Games with virtual play-ground

The Glossary (Part 3) compiles, in a single alphabetical sequence for easier reference, the definitions provided in the Introduction, the Rules, and the Tables.

Finally, a selection of 59 classification examples (Part 4) created partly by the authors and partly in collaboration with experts in the field are given (Bianchini and Munini 2024, 61-69). The examples are divided into two parts: in the first, games are listed in alphabetical order, showing the respective values assigned to each game's classification facets; in the second part, games are ordered according to their classification number, demonstrating an example of the final sequence for sorting and organizing games in a physical collection space, highlighting how similar games are grouped together in homogeneous classes, while different games are progressively placed further apart.

6. Discussion and prospects for the future

The game classification system discussed in this article has undergone two preliminary evaluations. It was presented to the public during two seminars and it was distributed to a group of experts and volunteers who tested its application on their own collections.

In the seminars, the main features of the system were introduced: the twofold method of development of the classification system (top-down and bottom-up), the identification of fundamental concepts, the definition of the five facets underlying the original five main classes (space, materials, setting, game outcome, and genre), the schedules, and several application examples. Participants at the seminars expressed positive opinions and indicated their intention to apply the new classification system to their own game collections in at least five cases (among which three toy libraries within a library, a school toy library and a play and toy museum).

The seminar participants also provided several suggestions. For instance, they proposed the creation of classification numbers that do not necessarily include all predefined facets. They also requested the inclusion of a facet related to the age of the players, which is particularly important in the context of video games (see section 4.6). Additionally, they suggested distinguishing between 'light' thematic games that present a theme solely for commercial purposes (such as *Dobble Harry Potter*) and real thematic games in which the game's rules involve the application of specific skills directly connected to its theme. A criterion for this categorization could be whether substituting or omitting a 'light theme' does not change the game significantly.

Compared to the preliminary version reviewed by classification experts and presented during the seminars, the classification system has been updated in several aspects. The notation has been made more user-friendly, readable, and mnemonic, and the order of the elements (isolates) in the

arrays has been revised to more closely adhere to the principles proposed by Ranganathan (Ranganathan 1959). Moreover, a sixth facet Age was added to express the suggested age for players. Based on these modifications, the first definitive edition of the classification system is expected to be published at the end of 2024.¹²

The application of the classification schedules both during the development of the scheme and by the involved experts showed that the main categories are relevant, clearly outlined and easily applicable. As each expert was free to choose the game to be classified by the new system, some particularly common games were classified twice or three times. A comparison of the results of the classification process showed that they were mostly overlapping. Anyway, some differences were found, due to the updating and the changes to the classification schedules during the tests. Part 4 of the classification system is particularly useful for understanding the potential distribution of games within spaces reserved for institutional collections. Due to a bias towards table and board games, these categories constitute 84% of all examples in Part 4. Specifically, table games account for 45% of the examples, board games for 28%, and board games with panels for 11%. In the largest group, table games, 27 games are subdivided into 19 different subclasses, resulting in a ratio of 1.42 games per class. In the second group, board games, 17 games are subdivided into 11 different subclasses, yielding a similar ratio of 1.54 games per class. In the third group, board games with panels, 7 games are subdivided into 5 different subclasses, with a ratio of 1.4 games per class. The overall average ratio for the 84% of classified games is 1.45 (51 games across 35 classes). When all examples are included, the ratio is 1.37 (59 games across 43 classes).

The current classification sample is still too small, and an increase in the ratio is expected with the addition of more examples to the sample. Nevertheless, both the ratio for table and board games (1.45) and the overall average ratio (1.37) are highly satisfactory at this stage, as they demonstrate that the resulting classes are very small, each containing only a few items. Furthermore, the age facet – which has not been tested yet – and a device such as a book number could be added to further individualize each game within the class. All these characteristics indicate that the classification system is an excellent candidate for achieving its anticipated goals, namely the functions of selection, research, identification, and delivery of a game, or a set of games, to a player or group of players.

The future steps for the development of the classification system involve its promotion and adoption in toy libraries and libraries with game collections, as well as field-testing its functionality. To facilitate the dissemination of the classification system and collaboration among interested institutions, a Wikibase Cloud instance was created.¹³ This instance is expected to contain all the games classified by participating institutions and will make the classification data available to everyone.

¹² The first edition was published and publicly presented on November 9, 2024, in Udine. See Bianchini, Carlo, e Paolo Munini. 2024. *ClaG. Classificazione dei Giochi per ludoteche e biblioteche*. Udine: Comune di Udine.

¹³ See https://cla-g.wikibase.cloud/wiki/Main_Page. “In a nutshell, Wikibase Cloud is a collaborative space for individuals and groups to contribute, edit, and curate information in a structured way to help you transform your data into meaningful knowledge”; see <https://www.wikibase.cloud/>.

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