Towards a *Trading zone*. A semiotic method for cross-disciplinary case study analysis of gamified systems

Vincenzo Idone Cassone[1] [0000-0001-5058-302X]

[1] Università di Torino, Turin, ITALY
idonecassone@gmail.com

Abstract. Despite being a well-established concept in HCI, gamification still faces a series of significant research challenges, stemming from the consistent gap between its theoretical understanding and its practical design implementation. The aim of this paper is to propose an analytical framework which can act as a *trading zone* (Galison 1997), a space for the communication between different disciplines and practices involving gamification, starting from case study analysis. The contribution will first introduce the semiotic perspective on artefacts (objects, processes and technologies), then describe the main analytical tools which are used to define the social values implicit in design choices and the effects and outcomes of human-computer interactions; lastly, it will apply them to the preliminar analysis of the digital distribution platform Steam (by Valve).

Keywords: Gamification, Semiotics, Artefacts, Interfaces, Steam, Digital distribution platforms, collect-athon.

1 Introduction

In their introduction to the volume "Strengthening Gamification", Rapp, Hamari and colleagues [1] highlight that gamification, despite being nowadays a well-established concept in HCI, still faces a series of significant research challenges. According to the editors, in order to improve its understanding and its implementation, future researches need to address the predominant focus on immediate interactions and feedback (to the detriment of long-term effects), the gap between game design concepts and practices and gamification design patterns, and the lack of conceptual tools to explore the unexpected/unwanted results of gamification design.

These three challenges could be connected to Seaborn and Fels' [2] remarks, resulting from their systematic survey of gamification theories and applications: even today, the practice of gamification design shows a consistent gap between the theories of gamification and its effects, and the frameworks for the implementation and assessment of gamification design.

For these reasons, one's can speculate whether these gaps and challenges could be ideally eased by developing an analytical frameworks which, in Peter Galison's terms [3], could act as a *trading zone*: an abstract space which make possible the practical communication between a series of interconnected but heterogeneous theories, pat-

terns and practices, which in this way can be mutually translated in order to facilitate the development of theories and applications.

For these reasons, this contribution plans to propose a semiotic analysis of gamified systems, whose aim is to facilitate the dialogue and interaction between theories, practices and findings of the different disciplines involved in gamification. Semiotics is the discipline which studies the meaning-making processes in languages, behaviours and objects: it will be used as a shared perspective in order to facilitate the dialogue and communication between different theories and perspectives involved in gamification. The advantages provided by Semiotics are the result of its *metatheoretic* aptitude [4]: its concepts have been devised in order to make it possible a general degree of translation between different theories/disciplines in the humanities and social sciences. By way of example, a meta-language can be compared to a translator in a group of people speaking each its own language who suggests an artificial *pidgin* which provide a general level of inter-translation and sharing.

In light of this, the framework is designed to achieve three different analytical aims: 1) facilitate a general description of the interactions between subjects and gamified environments; 2) help in evaluating and making hypothesis on the effects of gamification design choices; 3) highlight the role and effects resulting from the introduction of gameful affordances [5] and game-like dynamics.

2 Semiotic analysis of gamified systems

The following framework for the analysis of gamified systems [6] results from the integration between several semiotic tools for the analysis of the design of artefacts. In the original contributions the theoretical basics and epistemological models of the present approach have been described and explained, while in the following pages, due to space limitations, they will be briefly summarised, so to provide a basic understanding of their implementation through the case study.

In the last decades, Semiotics elaborated a set of theories and analytical tools that make it possible to describe the meaning-making dynamics of artefacts [7]. Objects, procedures, interfaces, technologies etc are considered by Semiotics in relation to the meaning implied in their uses (human values and aims), in their interaction patterns (procedures, interfaces, misunderstandings), in their design (choices, advantages, limits, evaluations). These developments have been summarised through the focus on three dimensions: Values, Programs, Interactions. In this way the framework tries to integrate on a basic level the insights and perspective of psychology, sociology, ICT, media and cultural studies.

2.1 The cultural values of artefacts

Artefacts are first understood by Semiotics in relation to their expected *Value*: their meaning is the result of the overlapping of sociocultural reasons, appeals, usefulness, symbols linked to them and their general use. For instance, a car is generally linked to a specific function (means of transportation), but it is generally selected between similar artefacts (trains, bikes, taxis etc) in relation to other values and reasons: ease of

use, aesthetics, efficiency, costs, specific needs, ethics and many more. Values pre-exist objects, but they are also implied and incorporated in them.

Jean Marie Floch [8] created a general framework of the main types of Values which are diffused in cultures. The *Value Proposition Square* is not a categorisation (such as Marlow's hierarchy of needs), but rather a frame through which describe the relationship between assumed advantages/disadvantages, the reason behind specific design choices, the issues and differences in individual evaluations and so on.

Floch identified four ways through which objects are framed by values:

- either they are perceived as tools/means, for their utility (*Practical* values). E.g. a car can be considered as an efficient tool to reach the workplace.
- or as abstract ends/objectives, tied to existential meaning (*Utopian* values). For instance, a car can be seen as the embodiment of safety, familiar love, or a status symbol.
- non-existential meaning: solutions in which pros and cons are weighted and balanced (*Critical* values). For instance, a car may be chosen as a satisfactory solution to different needs (transport, parking, cost, travel, shopping…).
- Non-utilitarian meaning: the pleasure in itself, connected to playful and aesthetic qualities (*Autotelic* values). E.g. cars which are highly esteemed for their attractiveness or for the driving pleasure.

Objects are generally created and evaluated according to comparisons and interactions between those different types of values. For instance, a website layout may be designed and evaluated taking into account its practical values (i.e. responsivity, cleanness, ease-of-use etc) as well as the utopian ones (e.g. reliability, truthfulness etc), or mainly looking at aesthetics and playfulness (i.e. look, pleasure and sensations etc) or at the critical ones (cost-to-performance ratio, usability compared to aesthetics). Each design choice (size and position of elements, menu types, font, provider and servers) is influenced and defined by potential advantages in relation to one or more types of value. Certain solutions may combine them (i.e. a clean and responsive interface), while other may involve incompatibility and hierarchies.

By way of example, some people may decide to lose weight so to feel better and be healthier (Utopian value), but they are not able to go to the gym regularly (Practical value), so they may decide to try a running smartphone app instead (Critical value), but soon feels demotivated (negative Autotelic value). After a while, they mau discovers a gamified fitness app, and decide to give it a try (Critical value) too see if it really helps them (Autotelic value).

This frame makes it possible to map many psychological, socio-cultural and technological dynamics connected to gamified solutions, and to describe the role fulfilled by their different dynamics. Furthermore, it may be used to translate and integrate the many different Motivational theories discussed in gamification design: self-determination theory [9], behavioural models [10], the Player Experience of Needs Satisfaction model [11] and others.

2.2 Agents and Programs

In order to reach specific values (or avoid negative ones), subjects may plan actions and follow specific behaviours; following the concepts elaborated by Greimas [12,13] the relationship between subjects and values determine a *Program of Action* [14]: a shared task to be fulfilled through the combined work of a series of involved *Agents*, which includes all the subject (both human and non-humans) connected to the performance. For instance, the above-mentioned subject, in his Program to lose weight, end up involving at least two agents (himself, and the smartphone app).

A program can be broken down into different components, involving specific relationships between the agents. First of all, the establishment of a connection between the Value and the subject (*Manipulation*), due to willingness, seduction, compulsions or other reasons. Moreover, the acquisition or display of skills and prerequisites (*Competence*) determined by the Program; this leads to the execution of actions and behaviours (*Performance*), and to the expected evaluation/judgement over the results of the whole Program (*Sanction*) and the acquisition of expected values. These phases may overlap, nest and chain together so to build more complex performance systems.

For instance, the above-mentioned subjects may have decided autonomously to lose weight (self-Manipulation), but were not able to attend the gym regularly (failed Performance → lack of Competence), so they relied on a different project and tool providing different requirements (Competence) and different workout routines (Performance). Once again, the new routine may soon be abandoned (failed Performance), because they feels demotivated (lack of Competence → negative Sanction). This leads to the decision to try the gamified app (Manipulation). In this case, the app itself is being tested (sanctioned by the man) over its capacity to instil motivation (Competence) to make him follow the routine (Performance").

The notion of Action program and its phases may be useful to translate and make dialogue the many different frameworks elaborated to chart user behaviour and the design of gamified performance [15]: engagement loops [16] behavioural triggers [5] Flow's ideal path of performance and the connection between autotelic experience and performance itself [17].

2.3 Interactions, delegations and their outcomes.

Artefacts do not simply embody human values and behaviours, but interact with them producing differentiated social, cultural and ethical outcomes. Latour's *Actors Networks Theory* (ANT) [14,18] heavily relied on semiotic concepts elaborated by Greimas in order to analyse the way through which society is built upon complex and layered interactions between Agents. For instance, once a driver ignites his/her car, the sensor connected to the seat starts producing an alarm until the driver fastens the seatbelt. The set of agents (seatbelt + visual alarm + audio alarm) embodies and enforces a specific traffic law, which stands for a general Utopian value ("safety") diffused and represented in many norms, laws and artefacts. The set of agents has the ability (Competence) to "persuade" drivers to follow the law (Manipulation), under the threat of unpleasant noise (Sanction + Performance).

This process of re-articulation of Competence and Performance between human and non-human agents is called by Latour *delegation* or *shifting*: it is generally implemented to reduce the individual effort in something, to provide greater results or increase the effect of specific values (e.g. an elevator, the autocorrect software etc); but delegations can also be designed in order to increase the pleasure and engagement (autotelic values), to produce status symbols (utopian values) or to reduce costs and efficiency (critical values), strategies often related to many gamified solutions.

There are, however, several consequences of this shifting: additions or substitutions in the set of agents generally end up involving changes in the Competence required from other agents to successfully interact with the new set: Latour calls this phenomenon *prescription*. Different set of agents may produce distinct sets of prescriptions, and whereas some agents lack the required Competence, the expected Program may fail or be altered. For instance, a login system in smartphones may be enhanced with several safety measures, such as passwords, fingerprint sensor, face scan feature. The use of passwords results in the need for users to remember and write it (extra cognitive Competence), while fingerprint or face scan may be seen as simpler ways of access (physical Competence). But whenever users forget the password, or have sweaty hands or are injured/masked, the login become difficult or even impossible (failed Performance).

Generally, designers need to take into account possible issues resulting from the interactions of agents, generally tweaking the set of artefacts in order to produce the expected results (and values). For instance, doors may be protected in many ways: through a lock (a simple and economic solution, Critical value), or through guards (an expensive and luxury solution, tied with Utopian value). But guards can be bribed or fall ill, while locks may break or be forced, requiring adding new agents or change in the interaction (intercoms, surveillance camera, alarms). Prescription thus includes the totality of different use conditions, and their implicit moral, social, design, subjective, cultural ideologies incorporated through objects. Each change in the set of agents can cause further prescriptions and delegations, producing unexpected *anti-programs* or *counter-programs*. As a result, the choice in the set of agents can lead to complex, multi-layered environments, in which the design choices relies on many values and norms (safety, cost, risks, adaptability…) involving different abilities and requirements (technology, human ability, special circumstances, resources) resulting in dynamic and unstable patterns of interactions.

Through delegations and prescriptions, it is possible to describe the dynamics and outcomes of specific gamified design choices. The many techniques devised by game designers and applied to gamification may be investigated through the general outcomes produced in the motivational and behavioural patterns of agents, ideally providing a less standardised account of the elements of gamification, and a more precise understanding of the different types of gameful affordances [5], and ideally to greater complexity in gamification design [19, 20].

2.4 The analytical framework for the analysis of artefacts

By integrating the previous theories, it is possible to implement a framework for the analysis of gamified systems. Jean Marie Floch developed the layers of analysis de-

vised by Greimas into a practical framework [8] for the analysis of the meaning-making dynamics of designed objects. This framework has been generalized and used in order to describe the main characteristics of artefacts and can be applied in conjunction with the previous tools into a multipurpose analysis of gamified systems. It is based on three phases or steps: *configuration*, *taxic* and *functional*.

- The *Configuration* step consists in the analytical description of the main empirical parts which constitute the objects, of their relevant features and the expected actions and behaviours which may result from its use. This description is linked to the preliminary analysis of the main agents and functions connected to the parts, and the Programs involved in the human-nonhuman interaction.
- The *Taxic* step consist in a comparison between the artefacts and similar objects or classes of objects, in relation to similarities/differences in the set of agents, features or Programs. This make it possible to highlight the various design choices, which help to define the identity of the object itself. This comparison is then used to highlighting the underlying systems of Values and the outcomes of the Action Program.
- The *Functional* step consists in the elucidation of the outcomes of the previously introduced design choices and Values. The outcomes resulting from the design (whether technical, symbolic, economic, aesthetic and so on) are highlighted, with focus on the above-mentioned design choices, and the resulting effect for the categories of subjects involved. The final aim is to provide a better understanding of the way through which the gamified solution "make sense" for users, which cognitive, behavioural and emotive outcomes produces, and which role is achieved by the gameful affordances.

In the next section, this method will be initially tested through the analysis of Valve's Steam and the effects of its gamified solutions. The analysis constitutes a preliminary exploration of the platform, which may foster further integrations among disciplines and theories targeted at the case studies, and provide a general level of intelligibility of its working.

3 Case study: Steam

Steam is a digital distribution platform for videogames, developed by Valve Corporation, currently the largest online shop for pc gaming. Since its inception in 2003, Steam has evolved from a simple digital market for buying and auto-updating Valve's online games (such as *Counter-Strike*), to a complete digital ecosystem, in which publishers can sell their games. Steam currently also provides many services tied to gaming: online infrastructure services for single-player (cloud saving, auto-update and upkeep) and multi-player games (online network infrastructure, chat system), digital rights management (DRM) and anti-cheat systems, a strong social networking feature (friends lists and groups, in-game voice and chat functionality, and gift-exchange systems). Like most digital platforms, Steam can only be used after the creation of a user profile, which is tied to digital purchases, game library, avatars and social networking features. Developers can use steam's API to integrate many of Steam's functions into their products, including networking, matchmaking, in-game

achievements, micro-transactions, and support for user-created content (mods) through Steam Workshop. A significant feature of Steam is represented by the gamification of the platform itself: in the last years Valve has progressively integrated game-like elements and activities into its platform, making it one of the most complex and articulated examples of commercial gamification. Despite that, however, Steam is rarely mentioned in gamification books, courses or blogs, generally overlooked by case studies and analysis.

3.1 Configurative step. Gamers' libraries, players' showcases.

The Steam application can be downloaded and installed on any Windows, Linux or MacOs operative systems. The platform is structured like many traditional websites/working applications, with a main page featuring four main sections/pages: *shop*, in which users search for, select and buy digital games; *library*, in which users interact with, organise and curate the game they have bought; *community*, in which users discuss, review, trade and talk about games; and *user*, including the options for the avatar and user tag, statistics and user level, groups, badges and most of the gamified elements present in Steam.

The shop page works like many digital selling platforms: users can search for games by query, browse the platform through special filters (discount, genre, suggested, similar to, publisher etc), read reviews (and submit them), wish-list and/or buy games. A showcase at the center displays new games, according to the preferences of users, their libraries and their community relations. Once a game has been bought, it is displayed in the user's library.

From here, users can manage their library, install software and other options (review, communities, news etc): the library registers every game owned by users, both installed or not, which may be organised or divided by labels. Games bought through Steam will be displayed in the library page of each game and send data to the system: the number of hours played, friends who play the same game, date of purchase, number of achievements obtained (more below).

Achievements are the renown meta-game goals (objectives) that can be completed while playing the game: they are registered and displayed on Steam (outside the game boundaries), through the use of APIs that measure the user's data and behaviour. To all effects, they are digital trophies, badges or honours (and are sometimes labelled after that). While similar extra-game trophies have been implemented through contests since the eighties, their diffusion has been mainly a result of their implementation through Microsoft *Xbox Gamer-tag*: a shared user profile for all Xbox multiplayer games, which rewarded players with points and digital badges for completing these additional tasks. The vast majority of games on Steam now includes achievements, which can be displayed in the library, in the user profile and thus seen by friends or other users (social dynamics).

Steam *User profiles* are composed by an ID/nickname, an avatar and a Steam level. Users start at level 0 and can increase their level by earning experience points (XP), either through buying games (the higher the cost of the game, the more XP are awarded) or by obtaining specific badges. Increasing one's level influences many limits and

values on the platform: users can display more badges in their showcase, increase their limit of Friends on the platform, get better chances to obtain special objects.

Steam *Badges*, however, are different from typical achievement systems: they can be obtained (more precisely, *crafted*) either by fulfilling specific tasks which constitute a sort of tutorial of the main features of the platform (adding friends, voting reviews, taking screenshots etc), or more often by completing full sets of digital cards that are awarded by playing the games themselves. *Cards* are tied to most Steam games, always as part of a card set (the size of the set is variable) and are awarded by playing. Users may gain only a limited number of cards by playing games, so in order to complete a set they need to exchange cards (or other objects) at the Steam market, a community system in which users can buy and sell digital items which are part of the Steam platform. Cards and virtual items can be sold and bought, while badges and XP cannot. Just like on the stock exchange, the value of the object is decided by means of the selling and buying price (ranging from a few cents to several euros), with a percentage going directly to Valve. As parts of collectable sets, not every card or digital item has the same rarity as the others: when playing, the opportunity to get rarer cards depends on the User's Steam level, through the system labelled *Booster pack drops*. The higher the level, the more the chances to get a rarer card (which is also more expensive).

Moreover, Steam features many intertwined social-network features, integrated into the shopping, browsing, collecting and "levelling up" dynamics. By default, users can see their friends' libraries, their showcases and what they play/are playing with; they can chat with them, exchange gifts such as games or other virtual objects (cards, items, gems); users are notified whenever friends are playing (and at which game), and they can see others' activity logs. Last, Steam features a showcase for all users: similar to the user page in many social networks, it displays the user level, a selected number of Badges (the higher the Steam level, the more slots are available to display badges and other virtual items in the Showcase), the recent activity log (which games have been played, for how long etc) and achievements. All this info can be showed just to friends or to all Steam users, depending on the settings chosen on Steam profile.

Like many digital stores, Steam features specific special discounts during holidays or at other significant moments (Christmas, Summer, Spring, Halloween, Back to School, Easter etc). Since 2012, all these special sales have made it possible for players to earn special badges, usually by buying games and collecting cards in order to craft the relative special badge, which changes every year. In addition, from 2011 to 2015 (and recently once again in 2018), Valve organised special game-like contests during these special sales (usually during the winter sales and summer weeks). On those occasions, the platform was updated with special game-like contexts, different challenges which made users compete and cooperate in order to gain more cards, special deals, XP and so on. These competitions were generally tied to the main actions available for the platform: collecting, playing or voting for games, and so on. As for the card sets, most of the time users who could not or did not want to complete the challenges could simply buy the remaining cards, in order to craft the badge. However, the implementation of game-like contexts ended up causing specific (and unforeseen) consequences in the behaviour of collectors and users. Steam finally decided to

stop its summer events after the controversy related to the context Summer Adventure 2014 (see below).

3.2 Taxic component. Gamer tags, libraries and networks.

While Steam is the first and the biggest platform for digital distribution of games, in the last few decades many other companies have started their own platforms in order to enter a growing market (digital games sales have been steadily increasing year by year): this includes similar platforms for the distribution of PC games (*Origin* by Electronic Arts, *Uplay* by Ubisoft, *Good Old Games* by CDPR), from those available from console providers (*Xbox Live*, *Playstation Plus*) to the newer platforms developed by smartphone companies (*Android Play* by Google, *App Store* by Apple).

There are significant differences in features among these many platforms, with the most essential ones (*Android play*, *App store*) featuring only the basic activities of browsing the shops and being able to acquire digital products, mostly tied to some form of purchase history features and install management, coupled with limited information on the product itself and the possibility to evaluate the purchases (write reviews and vote them). The more elaborated ones (those targeted at players) on the contrary provide many extra features, mostly tied to some degree of social networking features (necessary for online play) and digital library management. Steam goes further in including more integrated data sharing features between the shop, the community and the other features: data about the game and its use (purchase date, time played, last used in, achievements etc) tool hyperlinks (to the shop page, to the community network, to downloadable contents, review etc) and related user-generated content (mods, snapshots, video etc, community posts). In addition, Steam gives further options in order to make users curate and organise their digital libraries: it is possible to create labels, add tags to games, manage mods within Steam etc. A similar unique feature of Steam is the recent *Curator* function, part of the social networking elements, which could be compared to Youtube channels: curators are individuals or organizations that make recommendations to help others discover interesting games in the Steam catalogue. Users can follow curators, be updated about their reviews and game suggestion lists and to have their favourite games appear in the Steam homepage showcase.

Yet, the above-mentioned library and curation features make Steam more similar to digital collection management applications: software (or websites) which are used to register, track and organise collections books, movies, stamps and every genre of collectibles. Some well-known examples are *Goodreads* and *Anobii* (for books), *AnimeDB* and *AnimeList* (for anime and manga), *IMDB* (movies), *KeepRecipes* (cooking recipes). Most of them have already included many social network platforms over the years, hence the label “social cataloguing applications”.

The main difference between Steam and other digital shops lies in the ability to provide a direct link to the actual owned content, and the possibility to purchase it on the same platform. On the contrary, the vast majority of these applications are limited to the creation of lists, with no direct relation to the purchase or license of the content: while the most recent ones provide semi-automatic data gathering (through online

database), the older or simpler ones require the user to input all data related to his/her purchases. The concept and structure of Steam is more akin to a digital ecosystem, in which users are completely immersed and do not need to leave for any of the steps which are part of their hobbies: in Steam users search for games they may be interested in (through curators, showcases and browsing), keep track of the game and price (wish-list, steam news update), may buy eventually (game shop and library), play solo or coordinate with other players (Steam networks and game servers), evaluate or review the game, mod it, etc. On the contrary, curation platforms suppose that the users will buy and consume the media through other channels or applications.

The last significant difference regarding Steam is the use of a set of game-like elements connected to the user profile, which record, keep track and represent the activities that users perform by using the platform through statistics and data. This feature of data recording and visualisation is often labelled as *Quantified-self*: the process of using technology to track and record data about daily activities, with the aim to inform and correct human behaviour, initially applied for instance, to health and fitness apps (such as Runtastic). The delegations involved in these systems have however been subject to criticism related to their effectiveness and to their ethical implications [21].

Steam, however, does not simply keep track and display data about purchases and play activities (a technological delegation of individual memory): it translates those data according to unique and non-conventional units of measurement. Any user is supposed to be able to know the conventional meaning of "You've played 6h in the last two weeks" or "you've spent 314$ for the game X and its DLC", since they refer to a common and shared portion of the semiotic encyclopaedia. While the same cannot be said for "your user level is 15" or "you've crafted the Summer Camp badge" or "there's a new item in your Inventory". In order to efficiently understand these messages, a specific Competence-knowledge is required: the one which is common (but not exclusive) to many RPG (role-playing games), in which the avatar's experience is generally represented through a level (which stands for his/her skills and progress as a hero), players can often create magic items from sparse ingredients (crafting) and put every item collected or looted into their inventory. Of course, since the model user of the platform is expected to be a gamer, this experiential framework is easily interpreted and applied to his/her progress as a user. A main difference with quantified-self applications lies in this fictional (yet abstract) layer of technological representation and description: the platforms translate and re-semantise the human Action Program through a specific *narrative model*. This process however is only partial, since it does not create a full figurative diegetic universe, but only evokes it through a mix of text, numbers and icons.

Over the years many digital games distribution platforms (Microsoft, Sony and Google ones) started to imitate Steam game-like elements, adding user levels and experience points, badges and achievements. However, while the game-like elements are rather standard and feature only minimum figurative differences (badges vs trophies vs achievements), the user progression systems are rather different from the one used in Steam. The difference lies in the dynamics through which the progression of users is encouraged (Manipulated), measured and recognised (Sanctioned). In Xbox live gamer-score, Playstation plus level and Google play level, users gain points only

by obtaining achievements and trophies, not just by buying the game: they need at least to play it to some degree. Trophies and achievements present different rarities, with the rarest being tied to the most difficult endeavours (e.g. a platinum trophy require a player to finish the game at maximum difficulty without dying once). In Steam, users gain XP only by buying games or digital content (the higher the price, the more the points), and by crafting badges and digital objects through cards and items in the inventory. This is even clearer if Steam contests are taken into account, since the most common way to earn special badges and XP during those events is by buying games, and subsequently using digital items obtained while playing to craft badges. As a result, it could be said that while the progress systems of other platforms translate and represent the experience of users as gamers/players, Steam seems to represent user progression more as that of a buyer or, more precisely, a collector.

3.3 Functional step. Collect-athon as a representation of progress.

As a result, Steam is an ecosystem in which the act of buying/collecting games may foster further chances for collecting within the platform, generating a virtually endless cycle/progress, depending on the user's response to the system itself.

Initially, users buy games (1st collection layer). Moreover, games played through Steam reward users with cards (2nd layer), which belong to broader sets; to complete those sets, users need to exchange cards and items at the Steam market, which makes it possible to complete the set and obtain the relative badge (3rd layer), which in turn awards the user with XP. By raising their level, users gain better chances for rarer cards and items (plus other advantages to their social status as collectors). In sum, the act of buying and playing is integrated in the broader hobby of collecting, through the interaction between collectable digital items, digital representations of users' progress, and a feedback-and-reward cycle.

The interactions between the many features and systems in Steam thus reinforce a specific representation of its users, which is deeply focused on a digital narrative on the experience of collecting. In this way, the design implies a specific *model user*, defined by certain characteristics, needs and behaviours. The shop, the library, the social network features are linked together through the user's progress systems: they all concur to shape the representation of the user as a gamer collector, by depicting his/her actions on the platform as a continuous process of progression which translates a horizontal expansion (broadening owns collection) into a vertical one (gaining experience and progressing in level). Instead of highlighting the collection as "horizontal" progress, made by a series of discontinuous acquisitions, Steam translates the process through the "verticality" of progress, shaping the user as a collector and player at the same time.

A basic set of elements and dynamics, evoking role-playing games, is used to provide continuity and translatability among the practices of buying, playing and collecting:

a) by assimilating the act of buying to the experience of collecting, and

b) by representing the process of collecting (games, badges) as a progressive and continuous Performance, and

c) by translating the experience of playing games into a further experience of collecting (through cards and achievements.)

The purchase of a game is now part of a broader and virtually infinite process of collecting; the value of the game itself may be backed and strengthened by its value as a relevant piece of a collection, and by its value as a step towards the development of the collection (a Utopian value, due to its status and ideal symbolic nature). By linking the library features to the social network features, the connection between collection and the identity is strengthened: the user is perceived as a result of his/her actions as a collector and a player.

As a result, the metrics of the user's progress, the elements in the inventory systems and the dynamics of card acquisition and badge crafting interact in order to translate the process of purchase games into a relatively oriented, defined and virtually infinite process of collecting and shaping of the user's identity as a gamer. In Latour's terms, the structure and algorithms of the Steam platform are delegated with the cognitive process of organising and Sanctioning the user's actions: this delegation is a translation of multiple possible individual paths, values and patterns, into a standardised one, intended to produce a defined Program of Action, shaped as a cycle and enforced by sets of feedback (buy games / receive cards / complete sets / receive badge / increase level / better chance to collect and to showcase...). The cycle between the act of collecting (as if it was a game) and playing (as if it was collecting) reinforces and strengthens the double correlation between buyers and players. The multiplication of items and sets of collections (achievements, cards, items, badges) is tied to the monetisation features of the Steam market, and the desire to buy more games to increase their own level further ties players to buyers and collectors. The platform could thus be compared to a *collect-athon*: a sub-genre of platform games, which require the player to explore in order to collect elements or pieces of various objects (keys, vases, glasses, stamps) in order to progress to the next levels.

The act of collecting in Steam is represented as a continuous (almost endless) process, in which the model user is represented by a motivated and disciplined subject. While many gamified theories stress the role of challenges and mastery, the ideal Program of Steam users may rely on patience and determination. The strategy through which the system deal with the possible lack of motivation or interest is the multiplication of the collectibles, and the assimilation between the user path and the practice known as *grinding*: the act of continuously repeating the same simple activity in order to slowly gain experience points, and money and collect new items.

The dynamics and visual metaphor of grinding may thus be used by Steam to help users against the possible counter-programs involved in collections: the feeling shared by some collectors that the act in itself has become a fruitless and monotone repetition, which is responsible for the loss of motivation. To prevent this, the Steam model user is supported by the reassuring and constant visible progress and the multiplication of the collections at stake.

This preliminary understanding may provide some insights on the reasons behind the (now discontinued) Steam sales contests. During the *Summer sale contest* in 2014, each user was assigned to one of five groups at the beginning of the sales; each day, users could obtain points for their group by buying games, obtaining cards and crafting badges. At the end of each day, a selected number of users in the group with more

points would be awarded one free game among those displayed in their wish-lists. Instead of competing every day, users decided to coordinate on the social media platform Reddit to fix the contest through a mutual non-competition agreement, preventively selecting a winner for each day. This led Valve to suddenly change the rules during the contest, generating many complaints and various additional issues, which led to the end of the Steam Holiday Contests and challenges.

It may be that the idea of fostering the collecting system through a form of competition over a newly generated artificial scarcity may have clashed against the assumed and traditional values and beliefs implicit in the non-competitive, slow and steady "horizontal" nature of the system, leading users to subvert the new system through a mutual agreement to ensure better chances to buy and collect for everybody. While only a partial account, this event may only show how complex and fragile the meaning-making processes behind complex gamified systems and design may be.

4 CONCLUSIONS.

Of course, the analysis presented here is only a partial and preliminary investigation of the possible gamified dynamics of the Steam platform. In no way it may be representative of the complexity of the dynamics of the whole system; similarly, it can't properly describe the different behaviours and patterns enacted by the users of the system; finally, it doesn't pretend to evaluate the system efficiency and its ability to produce the intended result in the long term. All these questions/issue may only be answered through a multidisciplinary and collective investigation, which manage to integrate the many findings of different disciplines in order to confirm or criticise the temporary findings hereby provided. The aim, expressed at the beginning of this contribution, to help the development of a general *trading zone analysis* for gamification design.

With this aim in mind, the analysis may have brought several significant insights for the understanding of the case study, and for the investigation of gamification. First, the analysis showed how a standardised set of game design elements may produce a complex and unique gamified system, which may be used for better analysis and insights on game design and gamification design alike. Following, the previous insights may be backed or corrected through both qualitative and quantitative analysis, aimed at observing the empirical behaviour of users and to better describe their competences and interactions with the platform. Moreover, the insights in the design implementation and the implicit sociocultural values may mutually intersect with psychological theories on user engagement for a better understanding of human behaviours and drives. Finally, the semiotic theories and tools may provide a general cross-disciplinary stepping stone for the understanding of the unexpected and unwanted consequences of gamified design and user behaviours and values.

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