Gamification for Productive Interaction

Reading and Working with the Gamification Debate in Education

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Abstract— **We examine the gamification debate of recent years and we propose an alternative, heuristic definition for gamification in learning situations. After considering several critiques of the gamification concept, we privilege in our definition 'interaction' over 'motivation', 'simple gameplay' over 'game mechanics', and we highlight the diverse and changing behaviors of user/players. We re-define gamification in learning contexts as 'simple gameplay to support productive interaction for expected types of learners and instructors'. We argue that this definition offers a lowest common denominator to inform gamification in education.**

Keywords-gamification, situated interaction, motivation, player types, serious games

I. INTRODUCTION

Gamification is a recently coined concept referring to design that affords gamefulness into a non-game activity. This approach is, in some ways, old, if we consider various attempts to introduce gameplay into work, from Soviet competition to the "fun at work" movement in US management during the 90's [1]. There is also novelty. Digital technology enables radically larger scales for gameplay, and introduces new tools and new publics. There is also, arguably, a generation shift, to the extent that current students, trainers, employees etc. use digital games as a mainstream mode of expression [1] [2].

As we speak, the 'gamification' concept is increasingly taken over in business, in education, health-care and other public-good oriented professions, and, consequently, in academic research as well. This upsurge is accompanied by animated debates and blazing criticism, currently situated mainly in opinion articles [3–5] and in conference venues [6] [7].

In this paper we analyze the gamification debate: we highlight the main critiques of gamification, and we engage some of their practical implications. We then propose a heuristic definition of gamification of learning to assist gameful design.

II. NEOLOGISM OR PRACTICE?

The entry point of the debate concerns whether "gamification" is a new phenomenon, or rather a buzzword [5] to market old wine in new bottles. We can also find this discussion in the history of Wikipedia's entry on Gamification, an article that has been proposed for deletion in 2010 on grounds that it covers a neologism instead of a process [8]. For sure, there are several concepts that point in similar directions, such as "fun at work", "funware", "gameful design", "serious games", "games with a purpose". Gamification is favored in business circles, and it often involves an additive model: "adding" game mechanics to pre-existing actions to make them more salient, engaging, or enjoyable for participants. This does not preclude the design of gamified systems from scratch, or applications in which it is difficult to separe the "game layer" from the "work layer" [9]. Still, gamification points to the design of a system in which the logic of a non-game activity remains dominant in accounting for success or failure.

This is where the line can be drawn between gamification and serious games: the latter involve participants in a gameworld with intrinsical definitions of success, while gamification builds gameplay on definitions of performance that, as a rule, are experienced as non-gameful (such as profit or savings, learning or changes in health, productivity in work, richness and relevance in communication flows etc).

This line between gameful and non-gameful is also where gamification can seem ridiculous if not outright dystopic. Users ridicule what they find to be poorly gamified systems [10], or protest gamification of activities that are deemed morally unamenable to gaming [11] [12].

Gamification is, then, a current approach that aims to reap benefits experienced as "real-life" (often financial, but also learning or health outcomes) from using digital game mechanics to (re)design an activity. It may ultimately prove a short lived concept. It may also prove a risky endeavour, if the game logic distorts the non-game logic of the target activity – a challenge shared with serious games [13]. In any case, the debate around gamification is an important element that brings it value, through explicit formulations of promises and reservations. Where does this debate leave us, if we aim to improve our work in education through gameful design?

III. THE GAMIFICATION DEBATE

Nick Pelling coined the term "gamification" in 2004 [14] for his Conundra consulting company, to propose that electronic devices can be profitably turned into games [15]. The term and practice took off a couple of years later, with a software rather than hardware direction; Bunchball was the first company to offer game mechanics as a commercial

service, in October 2007 [16]. By 2011 - 2012 the concept was in full expansion, fuelled by a host of gamification platforms [17], books [18], [19], academic and opinion articles.

Business has adopted the concept with some enthusiasm, leading critiques to label it a marketing-driven fad and a deceitful rhetoric [4], [5]. Still, this is not the sharpest accusation. Commentators have mainly indicted it on moral grounds as being (potentially) exploitatory [4], [14], [20], and on design grounds as being overly simplistic [3], [4] and degrading for gameful design and its targets. As the practice spreads, its anticipated pervasiveness is interpreted in dystopian terms, in a discourse of gamification fatigue [21].

A. *The rhetorical critique*

These comments raise questions at all levels. An introductory, basic issue is: should we use the term at all, other than for criticizing it? Bogost recommends boycott and even substituting it for its alleged synonym "exploitationware" [4]. A designer and media philosopher, proponent of the "procedural rhetoric" approach for the study and design of serious games [22], Bogost remarks of gamification that, by its "ify" suffix, the word promises automatic efficiency in harvesting the magical power of games: "*It keeps the term "game" and puts it right up in front, drawing attention to the form's mysterious power. But the kicker comes at the end: the "-ify" suffix it makes applying that medium to any given purpose seem facile and automatic*" [4]. Robertson proposes "pointsification" as a replacement [3]. "Gameful design" or "gameful work" are available as non-ironic substitutes [9], [23].

We have decided to use the term, mostly for principled reasons (how else?), and partly for pragmatic considerations. We share Stern's overall take on gamification critiques, which is to accept them as a starting point for working towards better design [14]. We also have an interest in communicating with the business world, and an appreciation of many gamification platforms that offer complex tools for design thinking; "gamification" the word offers a shared currency across the academic / business divide, while "gamification" the process can support effective business solutions [6]. Pragmatically, "gamification" is also a growing focus of academic communication, and using this term hopefully brings our work in dialogue with authors sharing common interests.

B. *Exploitationware?*

'Exploitation' and 'crudeness' are related critiques of gamification. At a first glance, exploitation seems to be relevant only to business practices, referring to relationships between companies and their employees, on one side, and their clients, on the other side. Following Bogost [4], businesses are exploitative if they provide "counterfeit incentives" in exchange for real loyalty. Following Stern [14], gamification is exploitative insofar it lures workers into spending overtime in underpaid jobs. Following Deterding in his critique of Zichermann, gamification is exploitative if it means "duping customers" by obscuring exchanged value in commercial transactions [20].

Is this ever applicable to education? It is, if we frame education as a paid service. Students and / or other stakeholders pay for instruction, with money and also with working time and foregone opportunities; the latter two also describe teacher-incurred costs. Gamification in education is exploitative if it becomes an excuse for simplistic, inadequate design of learning. Unlike games, which claim value in and of themselves, the value of a gamification project depends on the value of the target service. From a sales perspective, gamification is valuable if it can convert an otherwise low value product into a high value selling success. On the contrary, from a learning professional perspective, gamification is valuable if it provides entry (and re-entry) points into a learning activity that is valuable per se. The higher the value of that learning activity, the higher is the value of its gamified gateway. Therefore, a risk for gamification in education contexts consists not (only) in the crudeness of game mechanics, but especially in the artlessness of underlying learning design.

C. *Simplicity and gameplay*

What are we to make of the charge that gamification uses overly simplified game mechanics, mostly points, badges, and leaderboards? There are two main dimensions to this critique.

Firstly, Bogost observes that simplistic mechanics are problematic insofar they do not encourage *systemic and critical thinking*, they do not push users into re-thinking the structures that shape their actions [4]. If anything, these mechanics are put in place to promote immersion and to deflect the kind of critical awareness that Bogost claims as a potential for serious games [24]. Gamification schemes are devices that call attention away from defects and focus it on goal-attainment, irrespectively of what goal that is. This brings us back to the exploitation charge: gamification is not a tool for critical system thinking (unless carefully designed to this purpose), but serves to sustain users' engagement with a given system. If this engagement is valuable, all for the good; if not, we can read the process as manipulation or outright deceit.

Secondly, the concept of "simple game mechanics" *misrepresents games*, as Robertson argues: "*What we're currently terming gamification is in fact the process of taking the thing that is least essential to games and representing it as the core of the experience. Points and badges have no closer a relationship to games than they do to websites and fitness apps and loyalty cards*" [3]. Game designers and other people who have lived through and appreciate the complexity of sophisticated games are the main voice countering "gamification" as a term and as a business product. Business-minded practitioners answers that gamification was never meant or understood to transform processes into games but, instead, to solve problems efficiently using game-inspired mechanics [6].

The question is, then, whether or not the concept of "gamification" misconstrues non-gameful processes as gameful. This largely depends on what instances are included under the term's umbrella. Would the addition of a progress-bar qualify? What about a progress-bar and a point scoring system? What if we also add named levels, star-shaped badges, and a leaderboard? There is a very long staircase of game mechanics until we reach something resembling a complex digital game. Still, there are many simple digital games,

essentially one-move competitions against self or others (from Tetris to Angry Birds), which are easier to mirror. The dilemma then revolves on a) whether these games should be considered a model for design or, to the contrary, "stupid games" [25] that resort to addictive psychological tricks, and b) if simple games are gameful enough for a design model, what does it take to model a process in their spirit?

Gamification is understood in distinction to "serious games", by proponents and critiques alike [6], [9]: it is gameful design, but not oriented towards the design of a full-fledged game with thought-through procedural rhetoric and levels of in-game expertise. The question becomes: is it valuable to seek to embody *simple gamefulness* in learning activities?

One problem with the business rhetoric of gamification consists in its promise of automatic motivational enhancement through adding simple game mechanics. This is an empty promise: there is nothing automatic about motivation. The term 'game mechanics' also contributes to the rhetorical power of gamification by hinting to a mechanical imagery in which persons have 'buttons to be pushed', and there are available, scientifically-proven-to-work methods to 'energize people'. That this is not so can be seen in many ways. For every simple game that has millions of users, countless others have hundreds. A simple game may feel simple in the playing present, and show a retrospective guise of simple design, but it is not prospectively easy to make. Motivation in an activity appears through situated interactions [26]. Artifacts (such as gamified systems) may provide motivational affordances [27], which may or may not be actualized in empirical use, but they are not motivating in themselves. Users' engagement with a product is often unexpected in focus and intensity.

Another problem with 'simple game mechanics' derives from the fuzzy concept of 'game', notoriously hard to define with a genus-differentia approach. Still, we can confidently argue that a game is not a sum of elements, but a system that affords gameful interaction. If gamification is to have anything to do with games, it cannot consist solely in the use of game mechanics, but it should also encourage gameplay – be it as simple as it can get. The quality and quantity of gameplay afforded by a system of game mechanics is to some extent unpredictable ex-ante, but observable ex-post. Gamefulness is a situated achievement, shaped by participants who take into account the specifics of their interaction situation (time and space arrangements, task details, social relationships, communication channels). Gameplay is not only variable according to social context, but it is also changing through time: players get used to games, devise new rules or cheats, take them more or less seriously, and all in all respond to shifting game sociability.

We therefore propose to differentiate *gamification* from *design that uses game-related mechanics without encouraging gameplay*. We can term such design "proto-gamification", if goals and rules are involved; this would include rationalization through quantification ("pointsification" [21]), markets, and feedback. We can also term it "simple playification" or "playful design" [20], [28] when there is playfulness through fantasy, role play and / or humor without action structures. Of course, playful design need not be simple – but this discussion falls beyond our scope.

This conceptual differentiation is pragmatically useful to orient ourselves in the gamification option space. For example, Herger writes: "*When LinkedIn is gamified (see the profile completeness bar), LinkedIn does not turn into a game. When we have a loyalty program, it does not turn into a game. When I add points and badges to a community, it does not become a game. Those applications hopefully become more playful, or gamy, give better feedback, are clearer about how to achieve certain goals, etc. but the core of the application is not a game*" [17]. Using our distinction, LinkedIn is not actually gamified – since users do not really 'play' the progress bar. Still, StackOverflow may be considered gamified if its detailed and playful badge system encourages contributors to 'play' its rule system, including profile completion (to earn the 'Autobiographer' badge). To the extent that applications actually become playful or gamy, they may be considered *gamified*; but, if they give better feedback and present goals more clearly, without elements of play, they should be considered *rationalized*, rather than gamified. Gamified design should at least encourage simple gameplay (which, we assume, nobody would expect to achieve with just a progress bar). Whether an application has been effectively gamified is, to some extent, an after the fact, empirical conclusion.

D. Challenges of pervasiveness

A critique that is independent of the manipulation – exploitation – crudeness triangle refers to the felt or anticipated pervasiveness of gameful design. Young and not-so-young generations have played digital games since their early childhood; for them and through them, games have become a widespread medium. As any medium, games are not neutral to the message; therefore, some people may resist them for certain contexts of communication.

On the one hand, there is too much of a good thing, and intrusion of games where we do not want them lends itself to dystopic readings [21] [29].

On the other hand, as more and more players become experienced and even sophisticated, they turn into critical observers with less tolerance for poor design. This raises challenges for instructors who seek to design learning activities gamefully.

First, while gameful design seems increasingly available and even compelling for the "games generations" [2] of students and instructors, the bar for quality raises to a level that not so many instructors are prepared for. Even teachers that are passionate game players may not have a methodical and even theoretical understanding of game design; there is a shortage of *game literacy* on its writing dimension [30], [31].

Second, engagement with a situation of gameplay is not static. Besides diversity of player behaviors, there is temporal change in how players engage with a game. Complex games afford learning, specialization, exploration [32]; simple games encourage addictive immersion through exercise [25]. None of these opportunities are typical for gamified systems, which often lack complex gameworlds, and invite activities in non-gaming context which can be admittedly arid [33]. The

problem is acute for gamified systems that require repeated engagement for days or weeks in a row, and less so for one-off activities. It is a Herculean challenge to sustain students' engagement at the game layer if it becomes old news.

IV. A Heuristic Re-Definition of Gamification

We start from these considerations to propose a heuristic re-definition of gamification for learning contexts. Why a new definition? When working in game design projects for several Computer Science courses, we have felt the need for a brief formulation that would point to the least common denominator of different team members' perspective, while still hinting to what needs to be done. That is, we aimed for an actionable definition of gamification.

Deterding et al. have formulated a widely used definition, at least in academic communication: "*Gamification is the use of game design elements in non-game contexts*" [9]. It is succinct, it discriminates gamification from playful design and from serious games, and it has wide scope. Nonetheless, we found it of little pragmatic use for our design work in education (although it is of service for academic argumentation).

Deterding et al. define gamification agnostically regarding its purpose, in contrast to business-minded definitions that cheeringly point to motivational and efficiency improvements. We sought a definition that would grasp gamification not just through its resources, but also through its expected outcomes, because we understand gamification as designing technology-with-intent, and therefore intent matters. We are mindful of the *automatic motivation* rhetoric of business arguments, and so we focus our definition on *interaction*, instead. We also understand gamification as essentially involving *gameplay* – even in its most minimalist, simple forms – and participants that have different and changing orientations. We term them *user/players*, signaling the tight integration of game and non-game orientations in gamified systems. In education, user/players include learners and also instructors.

In this conceptual framework, we propose the following:

Definition: Gamification in learning contexts represents simple gameplay to support productive interaction for expected types of learners and instructors.

There are several consequential differences between our approach and the definition proposed by Deterding et al. [9]:

- We find that "use of game elements" does not constitute gamification if the resulting system cannot be somehow 'played'. Although gamification does not require the design of a full-fledged game, it thrives on *simple gameplay*.
- Gamification from users' perspective involves oscillation between *using* and *playing* the system, as Deterding et al. notice of Foursquare [9]. This is a specific experiential feature of gamification, involving an attitude of *half-engagement* with the game layer, which is transparent towards the learning activity. The core logic of the learning activity (its relevance and priority orders) ideally remains visible and dominant throughout the gamified activity.
- Our definition maintains the separation between gamification and the design of serious games that involve deeper gameplay – but also introduces a distinction between gamification and other processes of *rationalization* that do not afford gameplay (we can term them 'proto-gamification').
- As regards the intent of gamification, we find it theoretically correct and pragmatically useful to focus on *interaction* rather than *motivation.* That is, we define gamification as structuring and stimulating *productive interaction* – that is, interaction that is ultimately evaluated with the productivity criteria of a non-game activity. It is through situated interaction between user/players, as well as human-computer, that motivation emerges.
- Gamification is oriented towards a productive purpose but also towards a public: designers work for *expected types of user/players* which include, in learning contexts, both *learners and instructors.* This addition to the definition may seem self-evident; still, we find it useful as a reminder that there are a multitude of use/play styles in gamified applications, as there are many styles in games, and also as a hint not to forget the role of instructors for the meaningful operation of gamified activities.
- Last but not least, given the specificity of our definition to situations of learning, we do not see the benefit of limiting gamification to non-game contexts. Game-based learning – for example, chess instruction or training in sportive games – can also be gamefully designed.

V. Conclusions

Is "gamification" a meaningful variety of gameful design? "Gamification" is an attractive concept for some, but a nuisance for others. The debate thrives on professional distinctions (broadly opposing marketing professionals vs. designers and scholars of serious games) as well as on other personal experiences and evaluations of gameful design. This controversy makes for insightful reading and also, we argue, for a repertoire of distinctions as tools-for-thought, and particularly as tools-for-design.

Teachers and instructors are increasingly taking over gameful design, and, at least in our experience, this is not as easy as the gamification rhetoric promises. Good results are definitely not automatic. Starting from an analysis of the pros and cons in the gamification debate, we set to formulate an alternative heuristic definition that would provide stable ground for design.

We sideline *motivation* to the benefit of *productive interaction*; we take into account diverse and changing forms of use/playing; we call attention to *simple gameplay* as a defining feature of gamification, which is distinctive from processes of *rationalization* through game-like mechanics. We thus define gamification in learning contexts as *simple gameplay to support productive interaction for expected types of learners and instructors.*

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