The role of wargames in the development of game design

Luiz Cláudio S. Duarte[1*] Thiago Schaedler Uhlmann[2]

[1]Independent researcher, Brazil
[2]Pontifical University of Paraná, Production and Systems Engineering Department, Brazil

Figure 1: Playing *Second Front*: Sicily in 1943. Photo by Luiz Cláudio S. Duarte.

Abstract

During the third quarter of the XX century, board wargames led the way in innovation in game design. Although small in comparison with present-day digital games industry, the wargames industry was far from inconsequential, and several leading digital game designers started their careers playing or creating board wargames. Even the term "game designer" was first used about the creators of board wargames. None of the information in this paper is new or unknown. However, we believe that, as in any other human endeavour, game designers can benefit from knowing some of the history from their field. Accordingly, in this paper we present some information on board wargames, with special attention to the influential role played by Redmond A. Simonsen, a graphic designer. As a case study, we use the board wargame *Second Front* in order to explore the design methods, decisions and innovations that continue to influence game design today.

Keywords: games; wargames; history of game design; graphical representation of information.

1 Playing at war

Games are probably older than civilization [15]; however, as far as we know, game designers are a much younger breed. Indeed, it is only from the 17th century onwards that we can identify any game authors at all, such as Sir John Suckling (*Cribbage*, 1630) [18] or John Jefferys (*A Journey Through Europe*, 1759). [6] But they did not think of themselves as game designers; even George S. Parker, founder and lead game designer of the former Parker Brothers game company, did not identify himself as such during his lifetime (1866–1952). [16]

This comes as no surprise, since the concept of design as an autonomous field of knowledge is not much older than the twentieth century [3]. The expression "game designer" was first used around 1970, and it was coined by a graphic designer: Redmond A. Simonsen, art director of Simulations Publications, Inc. (SPI). [2]

SPI published wargames: that is, games which have war as their theme, and which, moreover, strive to simulate military operations — whether from real life (such as the Battle of Waterloo) or from plausible what-if situations (such as an invasion of Europe by the Warsaw Pact forces in the 1980s). Although wargames are simulations, or models, or real-life military operations, they are also games, and

*e-mail: lc@lcduarte.com

Figure 2: Miniatures for a figure wargame of the Battle of Kunersdorf. Photo by Günther Rehorst. Retrieved from Wikimedia Commons.

so players are usually free to make decisions which their historical counterparts did not make. [21]

Many wargames are used by military forces and government agencies, all over the world, as vehicles for studying tactics and strategy. Indeed, the advent of information warfare has blurred the lines between simulation and reality. [1] In the past few years, wargames have also been used to hone business skills. [12]

They are the quintessential serious games.

Besides serious, "professional" wargames, there is a host of "hobby" wargames. Most hobby wargames fall in one of four general categories: figure wargames, interactive wargames, digital wargames, and board wargames. [21]

Figure wargames use troop and equipment miniatures, moved on model terrain surfaces (fig. 2).

Interactive wargames focus on player interaction, rather than on military operations. Negotiation usually plays a large role in games from this category, which may also present some features from role-playing games. One of the classic games in this category is *Diplomacy*, published in 1959 (fig. 3).

Figure 3: Playing *Diplomacy* (1959). Photo by Luiz Cláudio S. Duarte.

Digital wargames range from map-based operations, to vehicle simulators, to some first-person shooters. War-themed digital games routinely figure in the top sellers lists of a given year.

In board wargames, the players move cardboard counters over a map. In this paper, the focus is on board wargames, and accordingly any unqualified reference to "wargames" should be understood as "board wargames".

Very few articles discussing board wargames were found in previous SBGames proceedings, and usually only as part of a wider

discussion on non-digital games. [14] One article discussed the role of board games in the design of digital games. [9]

2   From ancient wargames to mass publishing

The wargames market started in the 1950s, but its roots were older. As a matter of fact, the relationship between war and games is nowhere a recent development. Some historians have argued that many physical games and sports in pre-industrial societies were training activities for war. [5]

Extant texts from the time of the late Roman Empire mention board games representing military operations. [13] *Chess* is probably the most well-known of medieval wargames, and it had a strong influence: in the seventeenth century, the first modern wargames were conceived as variants of *Chess*. [17]

In his landmark treatise on warfare, *On War*, Carl von Clausewitz was very explicit about the special relationship between war and games: "In the whole range of human activities, war most closely resembles a game of cards." [4]

During the nineteenth century, wargames became an important training and planning tool for the European armies. In the early years of the twentieth century, hobby wargames were already being published. One of the most influential wargames from this period was *Little Wars* — a figure wargame, published in 1913 by H. G. Wells (fig. 4). [19]
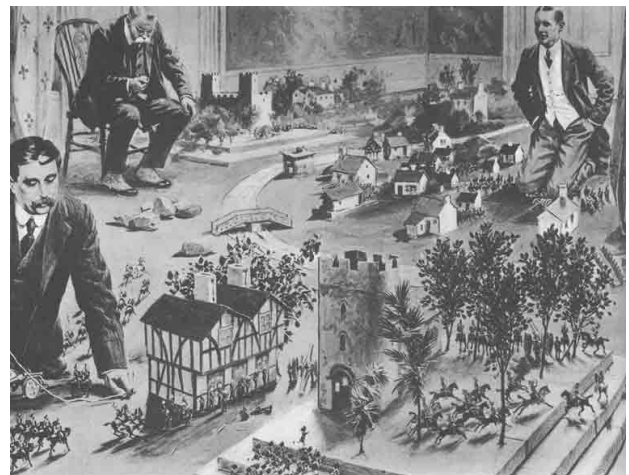

Figure 4: H. G. Wells playing a figure wargame. Public domain image. Retrieved from Wikimedia Commons.

In the professional wargames of this period, combat results and effects were determined by referees. Wells did away with the referee in *Little Wars*: combat results were either predetermined (close combat would inflict a fixed number of casualties), or were determined by a combination of skill and fate (firing spring-loaded toy cannons against the enemy).

There are still some hobby wargames which require a referee, but most wargames published since Wells' time have used predetermined results and/or fate (such as by rolling dice or drawing cards) in order to resolve combat. Board wargames rarely depend on motor skills, but many digital wargames — such as flight combat simulators — use them extensively.

After Wells, the next breakthrough in hobby wargames came with *Tactics*, by Charles S. Roberts (1952). The moderate success of this board wargame encouraged Roberts to found his own publishing company, Avalon Hill, in 1958. Avalon Hill would go on to publish several innovative wargames and a magazine (*The General*). This marked the beginning of the modern wargame industry.

During the 1960s, Avalon Hill usually published one or two wargames a year. The ready availability of games, and the availability of free personal ads in *The General*, created a small, but faithful group of customers. This was further fueled by some smaller publishers, and several fanzines. One of them was *Strategy & Tactics* (S&T), which in 1969 led to the foundation of SPI by James F. Dunnigan.

While Avalon Hill was a conservative enterprise, SPI thrived on pushing the boundaries. After SPI took over the publishing of S&T, the magazine completed its transition from a gaming fanzine to a military history and wargaming magazine, with a full new wargame published with each new issue. The graphic design of the magazine had already been revamped by Redmond A. Simonsen (fig. 5).
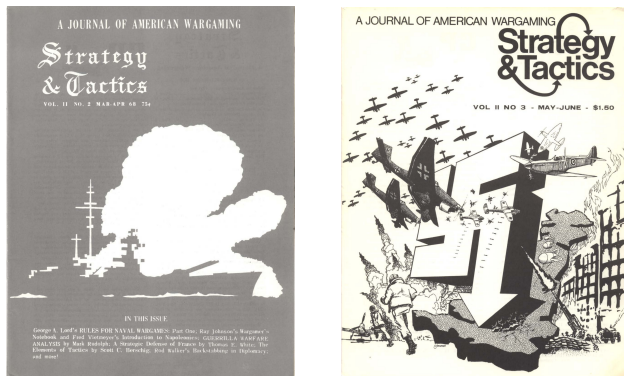
(a) S&T 12 (mar–apr 1968).   (b) S&T 13 (may–jun 1968).

Figure 5: The early covers of S&T clearly revealed its origins as a fanzine. Issue 13 featured a radical cover and logo redesign by Redmond A. Simonsen. Cover from S&T 12 by Richard V. Grout, cover from S&T 13 by Redmond A. Simonsen.

Simonsen was a graphic designer, an alumnus of the prestigious art college Cooper Union, and his ideas about design and graphic display of information were essential in the development of game design. [10] As for Dunnigan, he had already designed two wargames, both published by Avalon Hill. However, the slow pace and haphazard publishing process at Avalon Hill irritated him. [10]

Dunnigan and Simonsen shared a wish to create a quantum leap in wargame design and publishing, and SPI was their tool. Dunnigan was one of the earliest publishers to create an effective system of consumer feedback, which would provide essential information on what SPI's public wanted; but Simonsen was responsible for how to give them what they wanted.

Digital games rarely have written, comprehensive rules documents or manuals. Players with no tutor to teach them to play must learn from tutorials or from trial and error. Rules are implemented and enforced by the computer.

The opposite holds true in non-digital games, since players are fully responsible for implementing and enforcing rules and systems. Wargames will often add yet another feature to this: their complexity.

> Perhaps most important, wargames are unquestionably the most sophisticated ludic productions ever attempted in paper or predigital form, their systems and procedures self-documenting with all of their working parts materially exposed as soon as one opens the box and begins examining the often notoriously intricate rules, charts, and components.[…] These games thus offer the single largest extant corpus of coherent exemplars whereby the complexity (and chaos) of lived experience is reduced to ludic systems and procedures… [11]

In order to better evaluate Simonsen's impact on wargame design, let's take a closer look at a wargame. The wargame in the following examples is *Second Front*, a game about the operations in Western Europe from 1943 to 1945. Although it was published in 1994, *Second Front* is part of series which began in the 1970s, showing a direct influence of the wargames published by Avalon Hill and SPI.

3   Looking inside a wargame

As in other board games, wargames have physical components (the tangible elements manipulated by players) and a rules system (which establishes meaningful relationships between the components). Components can vary a great deal; as a rule, wargames will include at least one map, several cardboard counters, a set of charts and tables, and other play aids.

In a wargame, the map represents the relevant geographical features of the real-life terrain in which the simulated operations took place. Fig. 1 presents a snapshot of the *Second Front* map during play. Fig. 6 presents the same area (the island of Sicily, in Italy), minus the counters, in order to show the underlying map features.

Figure 6: *Second Front*: Sicily. Photo by Luiz Cláudio S. Duarte.

First of all, there is a hexagonal grid superimposed on the geographical features. The grid is mainly used as a movement regulator. Generally, a unit may be moved from one hexagonal cell ("hex", for short) to an adjacent hex, according to terrain features in the second hex. Hexes are numbered, in order to enable precise identification of any given position on the map.

Some wargames use no map grid at all, others use graphs, and still others use irregular areas. If a map uses a grid, hex grids are preferred to square grids. In square grids, the distance from any given square to the diagonally adjacent squares is approximately 1.42 times ($\sqrt{2}$) greater than the distance to the orthogonally adjacent squares. In hex grids, on the other hand, the distance between adjacent hexes is constant.

The designer must decide which real-life geographical features must be shown on the map; that is, which features played a role, or could have played a role, in the real-life military operations being simulated.

The map in fig. 6 shows part of the Tyrrhenian Sea and the island of Sicily. On land, there are physical features (two levels of elevations, woods), man-made structures (major and minor railroads, towns and cities, ports), and imaginary characteristics from the simulated reality (the district border in the Straits of Messina).

In *Second Front*, only the very minor towns, represented by small dots, have no game relevance, and are used just as geographical identification sites. All other map features play a part during the game;

thus, each one must be clearly presented, and easily distinguished from other, similar features. For instance, elevated terrain is shown by brown areas, with higher elevations shown in a darker brown.

There is a very real need for accuracy: the geographical features presented in the map must exist, or have existed, in real life, in the same positions and with the same relationships between them.

One crucial decision by the designer is the map scale: what is the distance between the centre of one hex and any of its six adjacent hexes? In *Second Front*, the map scale is of about 16 miles from one hex to one of the adjacent hexes.

Cardboard counters represent the real-life military units which were involved in the simulated operations. Fig. 7 presents two counters; the counter in fig. 7a represents the 1st Czech Armoured Brigade, and counter in fig. 7b represents a German fighter group equipped with Me109G2 aircraft.

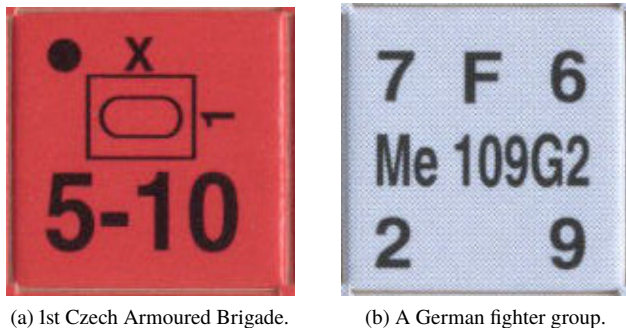(a) 1st Czech Armoured Brigade.   (b) A German fighter group.

Figure 7: Some counters from *Second Front*. Photo by Luiz Cláudio S. Duarte.

In a counter, all pictorial and text elements contain necessary information on the represented unit. For instance, in the case of fig. 7a: colours (black text on a red field indicates a Czech unit), the upper left black dot (which indicates lack of supporting weapons), the Roman numeral **X** at the top (which indicates a brigade-sized unit), the racetrack curve inside the rectangle (which indicates a tank unit), the small number to the right (which corresponds to the formal identification of the unit), and the numbers at the bottom (at left the unit's combat strength, at right the unit's movement capability).

This plethora of information must be codified in a consistent and coherent system, otherwise it won't be useful. As a matter of fact, many wargames — such as *Second Front* — employ some of the symbols used in real-life military maps; for instance, the Roman numeral **X** is used throughout NATO armies, and other military organizations, as the symbol for a brigade-sized unit.

The size of the units in the game is another of the scale-related design decisions. This goes hand-in-hand with the decision about the map scale. In the case of *Second Front*, the counters represent units ranging in size from battalions (about one thousand men) to divisions (about twelve thousand men), and several counters may be grouped in the same hex. In this map scale, units smaller than battalions would be irrelevant, and larger units would be unwieldy.

Tables, charts and play aids are part of the rules system in a wargame. They will often include terrain effects charts, combat results tables, and other information pertaining both to the real-life operations and to the simulation itself.

A smaller wargame may have one or two tables; a larger game, like *Second Front*, may have dozens, spread through several pages. The information in all tables, charts, listings, and summaries, must be cross-indexed with the rules, in a way that allows for ease of use when playing the game. Fig. 8 shows the Combat Results Table for *Second Front*, which indicates the possible results from a given ground combat — such as **AE** (short for "Attacker Eliminated") or **DR** ("Defender Retreats") — according to the mathematical comparison between opposing forces ("Odds Ratio") and a modified die roll.

COMBAT CHARTS AND TABLES

Ground Combat Results Table

Die Roll	Odds Ratio													Die Roll
	1:4	1:3	1:2	1:1	1.5:1	2:1	3:1	4:1	5:1	6:1	7:1	8:1	9:1	
-1	AE	AE	AE	AE	AE	AE	AH	AR	AS	DR	DR	DR	DR	-1
0	AE	AE	AE	AE	AH	AH	AR	AS	EX	EX	HX	DR	DH	0
1	AE	AE	AE	AH	AR	AR	AS	EX	HX	DR	DR	DH	DH	1
2	AE	AE	AH	AR	AR	AS	EX	HX	DR	DR	DH	DH	DE	2
3	AE	AH	AR	AR	AS	AS	HX	DR	DH	DE	DE	DE	DE	3
4	AE	AR	AR	AS	AS	EX	DR	DR	DH	DE	DE	DE	DE	4
5	AH	AR	AS	AS	EX	HX	DR	DH	DE	DE	DE	DE	DE	5
6	AH	AS	HX	DR	DR	DR	DH	DE	DE	DE	DE	DE	DE	6
7	AR	AS	HX	HX	HX	DH	DE	DE	DE	DE	DE	DE	DE	7
8	AR	HX	DR	DH	DE	DE	DE	DE	DE	DE	DE	DE	DE	8

Figure 8: The Combat Results Table in *Second Front*. Photo by Luiz Cláudio S. Duarte.

Just as components are a wargame's physical elements, the rules systems are its virtual elements. The rules systems give meaning to the components and create affordances to the players.

There are some rules systems which are used by many wargames. This common toolbox has the advantage of familiarity; experienced players will be able to understand the rules more easily when they use these systems.

For instance, most wargames will rate the combat strength of a unit; other factors being equal, a stronger unit has a better chance of winning a combat than a weaker unit.

Just as with combat strength, most wargames will rate the movement capability of a unit. For instance, usually a motorized unit will move faster, and farther, than a foot unit. This is often represented in abstract "movement points": moving a unit into any given hex will cost it some of its movement points, according to the terrain featured in the hex..

The flow of time is often divided in small chunks — "game turns", which can range from minutes to days or months of simulated time. This is "game time", that is, the time flow of the simulated operations; "playing time" is the players' time. For instance, a player could play for one hour (playing time), while the game operations could represent one month (game time).

There is a close relationship between movement points, strength points, geographical scale, size scale, and time scale. In *Second Front*, with its 16-mile hexes, units must be able to move at least one hex in one time segment. Thus, for instance, a game turn of 10 minutes would be clearly inappropriate: even the fastest motorized units would be unable to leave one hex in this time frame. On the other hand, a game turn of six months would enable a unit to march from Portugal to Russia, and back, in one turn.

Second Front uses a two-week game turn. This time scale is thus tied to the movement rates of the units, but also to their sizes and to the terrain scale.

The effects of terrain in movement must also be taken into account. A unit will move faster in flat, featureless ground than in wooded mountains. The scales of movement will also tie in to the movement points costs of a terrain; if the fastest unit has 10 movement points, a small obstacle must not have a cost of 20 movement points.

War is a very complex endeavour, and thus it is no surprise that a simulation of war will also be complex. Actually, wargame designers have long struggled with the tension between "simulation" and "playability" of a game. Too much information and the final product becomes a chore and not a game; too little information and the game is no longer a valid simulation.

When designing a wargame, there are a lot of high-level design decisions right from the start — and they will also have to take into account several production requirements. For instance, if publishing schedules allow for just one hundred counters, the designer will not be able to push forward a wargame with five hundred different counters; this constraint will have a sizeable impact on the scale

design decisions of the game.

Juggling all of these requirements and constraints can be a daunting task. One of Simonsen's most important contributions was the organization and streamlining of the design process of wargames.

4 DEVELOPING WARGAMES

Before SPI started publishing wargames, wargames were crafted and not designed. But the heavy information burden of wargames demanded a better-organized workflow. Simonsen was both a designer and a wargamer, and thus knew exactly what was necessary.

Accordingly, he introduced a new role in the publishing workflow: a game developer. This professional was responsible for turning the designer's prototype into a "camera-ready" product. Thus, he was responsible for managing playtests, editing and writing rules and play aids, preparing sketches and other graphical elements, and ensuring that the "house style" was preserved across several games.

The role of game developer in SPI was initially fulfilled by Simonsen himself, and later by others trained by him. Since then, a game developer has become one of the key people in most game publishing houses — and even in freelance design teams. In the words of Andy Lewis, from GMT Games:

> I don't have a design vision on games. I have a developer's view. The two really are different. To be a good developer, you have to put away the desire to make the game, be what you want it to be. It's supposed to be the designer's vision, and the developer is supposed to polish it so that the design vision shines through. […] We have gotten several games that have not needed internal development, but they were from designers who had their own developers and a very large core of dedicated playtesters. So the games went through the same process all our games do; they just did theirs before submission. [20]

Simonsen was also responsible for other innovations, which enabled SPI to easily publish several games a year. For instance, from 1973 to 1978 SPI adopted a common box for all games; the box had a clear plastic lid, and the game cover image would be inserted below the lid. In this way, there was no need to print different boxes for different games, reducing overall costs. SPI boxes were also the first to feature counter trays — recessed wells in which to store and organize the game counters (fig. 9).

Simonsen's main area of interest was information design. SPI soon added another magazine (*Moves*) to its publication schedule, and also published some books on wargames and wargame design. In the pages of these books and magazines, Simonsen often exposed his thoughts on design and development.

> More than almost any other type of game, simulations are enormous information processing and learning problems. Even the simplest game requires the players to manipulate dozens of discrete pieces (units) in hundreds of possible cell locations (typically hexagonal); sort out thousands of relevant and irrelevant relationships; and arrive at a coherent plan of action (a move) several times in the course of the play of the game. […] [T]he challenge to the graphic designer is clear: make the information the player uses clear, organized, accessible, and pleasing to look at for long periods of time. [22]

He also wrote at length with practical advice to the would-be designer, from design tips to the choice of pens. Simonsen also

Figure 9: The "black box" was a generic packaging system, which allowed it to be used by most games published by SPI from 1973 to 1978. Photo retrieved from https://www.tacticalwargamer.com/articles/hardware/spiboxes.htm

wrote several reviews, and he could be very critical of sloppy design; reviewing Avalon Hill's *Anzio* wargame, in S&T issue no. 18, he famously declared that

> There's one thing every wargamer can do to improve the box-cover art on his copy of ANZIO: spray it with three or four coats of white paint and do it over. […] The map board has to have been drawn with only one possible implement: a banana dipped in diesel oil.

Simonsen's greatest legacy was indeed in the field of graphical design and the graphical display of information; his ideas still hold relevance for designers and publishers of wargames, role-playing games and board games. [2]

Together, Simonsen and Dunnigan brought to life an idea with which Dunnigan had been toying for some years: wargames were a communication medium. Several SPI wargames were designed in order to enable players to create their own scenarios — in a way, they were the game mods of the time. [11]

The game publishing system developed by Simonsen allowed the fledgling SPI to easily publish a dozen games in a year, in sharp contrast with Avalon Hill's output of one or two games a year. According to Dunnigan's estimate, in 1969 about one hundred thousand wargames were sold, almost all by Avalon Hill; ten years later, more than two million were sold, and SPI owned a sizeable share of this market. [10]

5 THE LEGACY OF WARGAMES

By this time, board wargames were already in decline. Since then, they were eclipsed by other gaming genres: first role-playing games, then collectible card games, and now digital games. For all of these genres, several leading designers in the 1980s and 1990s were strongly influenced by the wargames from the 1970s, whether as players or as designers. Greg Costikyan, one of Simonsen's pupils at SPI, wrote about the multiplying effect of the early wargame industry:

> But the wargame market had a major impact on the development of the modern industry;

Figure 10: A digital version of *Second Front*. Photo by Luiz Cláudio S. Duarte.

it created, in essence, the first game geek culture. Wargamers were the first to call themselves "gamers" and to view themselves as something of a nerdy elite; the first books on game design emerged out of the field; and, indeed, the term "game designer" first appeared in the wargames industry (coined by Redmond Simonsen, SPI's art director), along with the first games to credit their developers on a consistent basis. And it spawned the first "star designers" — Dunnigan, John Hill, Richard Berg and John Prados, to name a few. Many of the earliest stars of computer gaming, including Chris Crawford and Dan Bunten, became interested in games because of the wargames they played. And board wargames retain an influence today; e.g., Rick Goodman, creator of *Empire Earth*, is an old school board wargamer. [7]

Simonsen's direct role in the wargame industry ceased in 1982, when he left SPI. By this time, there were already several wargame publishing houses competing for a shrinking market. But his role in the development of game design was already well established, from user interface practices to the algorithmic evaluation of game systems. [8]

Today, many wargames from the 1970s are gaining a new digital life. There are several tools, such as ZunTzu, which enable their recreation in a virtual medium (fig. 10).

Design started developing as an autonomous field of knowledge less than a century ago. [3] Before this, design processes already existed; what the development of design did was to offer many improvements to these processes.

The same can be said about Simonsen's role in wargame design. Several wargames were designed and published before him. His work not only allowed for better workflows in designing and publishing wargames (or other games): it allowed for better games overall.

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