

Printing Trends in Board & Card Games

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Abstract

The board and card game industry are facing growing pressures from digital games, as video and social media games become more prevalent. Emerging print and media technologies, namely printed electronics and augmented reality, could provide a board and card gaming experience that would draw in gamers who typically play digital games. The expected outcomes of the literature research, industry and market surveys, and subsequent paper are an understanding of the history of games, the current state of the game manufacturing and publishing industry, and attitudes of gamers who would be playing games embedded with the emerging technologies.

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Purpose of the Study

Design, production, and technology have a circular relationship. Designers have to design for current production practices and within current technology limitations. Those in production can only produce what others design and in the ways that technology allows. People developing new technologies often develop with an eye toward how others will use it and how it can be made. Will people use the technology? Who will use it?

The outcome of this study are projections as to where the board and card game industry is headed, and what technologies are expected to be used in printed games. By studying individual cases and current research and development (R&D) methods, enough data was gathered to make these projections. Current design and production practices have an impact on developing technologies, and vice versa.

Significance of the Study

This study holds significance for several groups of people. Designers and those in production - who work to make games look good - should view this study as an opportunity to learn about a developing designscape and production needs. Game makers - who want to expand the gaming experience - could likewise view this study as a chance to learn about how they can thrill their players. Gamers - who

want to stay current on where the industry is heading - would be equally as interested as the first two parties, if only to know what they will be playing next. For everyone it will be a learning experience, and for some it will be enough to drive their own experiments.

Interest in the Study

As a Graphic Communication major with a concentration in Design Reproduction Technology, my interest in this topic is trifold. First as a designer, it is in my interest to learn more about burgeoning design opportunities. Secondly, having an interest in developing printing technologies, and wanting to know how game designers and makers see them implemented in their products. Finally, and most of all, I am a gamer, and love playing games, and attend and staff conventions and hold leadership positions in gaming groups.

Literature Review

The category of “games” can be broken down into seven categories: dice, tile, board, dart, card, table, and electronic games. This study will only concern itself with board and card games, often colloquially known as tabletop games and trading card games (TCGs). In discussing game manufacturing, there are certain terms used in the industry that will also be used in this paper. The game designer is the person who designs the gameplay and game mechanics. Graphic design in games will be referred to as game art. Game publishers are companies that pay for the manufacturing and distribution of games, and these can be different from game manufacturers, which are companies that handle printing from publishers.

This report will assume that the reader has a basic understanding of gravure and offset lithographic printing methods, an understanding of bindery processes and practices including packaging and fulfillment, and an understanding of basic printing and packaging substrates.

History of Game Art and Production

The remains of Ur, dating back to the third millennium B.C., have revealed the oldest complete set of board-gaming equipment. Four board games of identical layout but varying decoration were discovered, all decorated with precious materials. These ancient table games actually were tables themselves, and richly decorated as objects of leisure could be afforded by luxury. (Parlett, 1999, p. 63-64) History is full of games of Pachisi and Chaupar scratched into temple rooftops (Botermans, 1989, p. 9), benches, and floors. Emperor Akbar (1542-1605) loved the game so much that he directed slave girls dressed as the game pieces on a courtyard designed for the game. Playing cards are reputed to have Indian ancestry, and began arriving in Europe in appreciable numbers by the mid-fifteenth century. They are also thought to have arrived through Spain and Sicily by Arab invaders. Playing cards were subject to a lot of use, and would reach an unserviceable state, at which time they were thrown away - as a result, little is known about early European cards. Fifteenth-century cards have survived as a part of bookbindings and restorations of bookbindings - paper was expensive, so unusable playing cards were recycled into bookbinding. Through the 19th century, playing cards were produced with woodblocks and copper engravings, and hand-painted by artists specializing in painting miniatures. The invention of xylography (woodcuts) made the mass manufacture of cards possible. (Botermans, 1989, pp. 65-67)

Before the mid-nineteenth century, most board games were imported from Britain. The games that have survived were usually carved or painted wooden boards. Card games had been played in the Americas since the colonial era, but were not manufactured commercially until the early 1800s; rather, they were imported from Europe. While the first American-manufactured board game is dated to 1822, the industry did not take off for 20 years when W. & S.B. Ives started their board and card game publishing company. By 1860, innovation in printing processes allowed for the mass production of games and made the practice hand-coloring nearly obsolete. W. & S.B. Ives and the McLoughlin Brothers were able to create a variety

of card games inexpensively using lithography during the mid-nineteenth century. Early boards were printed on paper, then linen-backed paper, then lithography sheets pasted onto cardboard. Chromolithography advances led to the proliferation of colorful, artistic games with the vibrant colors the method was able to produce. Rebounding from a recession in 1870, game manufacturers in the 1880s-90s produced well-made games with excellent lithography, including Milton Bradley and Parker Brothers (now both owned by Hasbro). The McLoughlin Brothers reached its peak in the 1880s-90s, producing large board games with wood-framed boxes, bone dice, metal tokens, and figural wooden pieces. Milton Bradley was one of the first to use the lithographic process, and as a result, was far more prolific. Much smaller game manufacturers created elaborate wooden board games with embossing and intricate artwork, which are now sought by collectors. By the 1900s, companies cut costs and as a result made less attractive and flimsier games. In 1922, Wolverine Supply & Mfg. began producing games on lithographed metal boards. Wolverine Supply & Mfg. could not produce their metal games and metal game pieces were replaced by cardboard; most game companies cut production by as much as 66%, (Whitehill, 1998, pp. 2-17) because of increasing metal prices.

In the 1960s, board games began to use three dimensions - starting with Transogram's Green Ghost, a glow-in-the-dark ghost spinner that played spooky sounds. Green Ghost also had players sticking their hands into mysterious holes containing items that feel spooky. Mouse Trap, Kaboom, Ka-bala, and Haunted House all used 3D plastic parts that players interacted with. (Polizzi & Schaefer, 1991, pp. 30-37)

History of Game Technology

What we see from the production of ancient to recent historic games is that games were made using technology mostly in their production, and in game pieces used in the game. Several curious exceptions all revolve around a very recent invention: the television. Many the 1950s and 1960s board game revolved around television game shows, sitcoms, cartoons, and extended to

film and musicals. (Polizzi & Schaefer, 1991, pp. 16-17) Game manufacturers purchased and bid on licenses for television programs before programs were even broadcast, and the game companies found that they now had direct marketing to one of their largest markets: children. The sheer number and popularity of television board games now seems alien, but putting it into the context that many families were just introducing television into their households, the phenomenon of a “Jackie Gleason,” “Hogan’s Heroes,” and “Today Show” board game begins to make sense.

Interacting with the television was taken to the next level with “interactive VCR” games. (Brunner, 1995, pp. 58-61) These games were usually board games with a card component, and actors would respond to certain actions when the players set the tape to the right time (through fast-forwarding or rewinding). These games later translated to DVDs that interacted with a physical game, usually in trivia format.

Current Game Art and Production

Game publishers come in several varieties: mass market, hobby, American specialty, and European companies. Mass market publishers include Hasbro (which bought both Parker Brothers and Milton Bradley), Mattel, Patch, Pressmen and University Games. Mass market games tend to be extensions of already existing games (like Hasbro’s Monopoly), aimed at children and families, and are simple to play. Hobby publishers include Wizards of the Coast (owned by Hasbro), Games Workshop, Wizkids, and TSR (which was bought by Wizards of the Coast). Hobby games are often miniatures (games played with by advancing figurines in battle simulations), role-playing games (RPGs), and TCGs and are aimed at a more advanced gaming market. American specialty publishers include Avalon Hill (known for Axis & Allies, a WWII simulation and strategy), Out of the Box (makes of Apples to Apples, an association card game), Mayfair (Settlers of a Catan, a resource strategy), Rio Grande (Carcassonne, a battle and resource strategy), and Decipher (How to Host a Mystery, a mass market live action role-play or LARP). American specialty games are those that do not fall into mass market

or hobby games, and are usually niche games that are printed in small runs. “European games” are also known as “German games,” or more recently, “designer games,” because these games stem from German board game traditions, which favor highly strategic games. European publishers include Ravensburger (Germany’s largest game company), Alea, Kosmos, Hans Im Gluck, Amigo, and Spiel Des Jahres. (Tinsman, 2008, pp. 85-127)

Game publishers typically pay for the manufacturing and distribution of games designed by others if they do not have a game development department of their own. Game publishers consider whether a potential game would conflict with any of their existing game lines in genre or market, and calculate the best and cheapest way to produce the game, including components and how many copies. The price to make games is much lower than what a consumer would pay at the store, because the game is touched by middlemen (\$2.50 to make the game, sold to a distributor for \$6, sold to a retailer for \$9.50, sold to the consumer for \$20). How much the game costs the target market influences the budgeting (a children’s game with simple pieces is likely to sell for under \$20, while an adult strategy game can sell for well over \$70). (Tinsman, 2008)

When a game designer successfully pitches their game to a publisher, the game is handed to the art department. A graphic designer can make or break a game, and the reasons are outlined in Schell’s *The art of game design: A book of lenses*:

“It can draw the player into a game they might have passed over.”

“It can make the game world feel solid, real, and magnificent, which makes the player take the game more seriously and increases endogenous value.”

“Aesthetic pleasure is no small thing. If your game is full of beautiful artwork, then every new thing that the player gets to see is a reward itself.”

“Just as the world often ignores character flaws in a beautiful woman or a handsome man, players are more likely to tolerate imperfections in your design if your game has a beautiful surface.”

Large game publishers assign artists and graphic designers, and game designers often do not get a say in the final look and feel of their game. In a smaller game publisher, the game designer may need to hire a graphic designer, which results in better control over the artwork. (Tinsman, 2008, pp. 52-53)

Ludo Fact is the largest game manufacturer in Europe, and handles printing, die-cutting, laminating, molding, and packaging for all of their game pieces, which are made of cardboard, paper, cardstock, wood, and plastic. In their printing, Ludo Fact uses six- to eight-color sheetfed offset lithography process for a wider color gamut, richer color, finer details, and smoother gradients. Multiple items are often ganged up on a press sheet, and cut later. In the case of game tokens (printed on paper and then laminated to greyboard), they are die cut and placed into game boxes still intact in their press sheet. They use the same lamination process to fix the printed gaming surface to greyboard to create the game board, attaching a board hinge to add longevity to the game. Box graphics are also laminated onto standup greyboard boxes, but specialty boxes can be made of wood with label graphics. (Conway, director, 2012) Game cards and playing cards can be produced in a variety of colors, shapes, and sizes and are primarily printed by offset lithography. (Botermans, 1989, pp. 67)

Current Game Technology

In February 2012, Hasbro announced their zAPPEd line of products, which use iOS augmented reality (AR) to add to gameplay. The stars of the zAPPEd line are Monopoly and The Game of Life, two of their most popular board games. Both games use the iPad as a banking device, a platform for mini-games in which players can earn various game points, and a way for players to customize their gaming tokens. With the addition of iOS, Monopoly has added a “suing” gameplay action, and The Game of Life has partnered with America’s Funniest Home Videos to play clips at certain moments in the game. A movie edition of Battleship was created, where a player plays a solitaire game against aliens on their iPad. Hasbro also created a new game to highlight the features available to their zAPPEd line, called Spellshot, in

which players take on the roles of battling wizards. A year later, the zAPPed line is sold through Hasbro's online storefront, Amazon, and Toys "R" Us, and has not permeated the gaming market.

As of the writing of this review, printed electronics (PE) is widely researched, but still not fully understood as to its capabilities, limitations, and usable applications. Ravensburger, a German game publisher and manufacturer, made a King Arthur game in 2003 that extensively used PE. Titus Linl, the Managing Director of Printechnologies based in Germany, presented HurraFussball at the IDTechEx's 2007 Printed Electronics Europe as a case study of a game incorporating PE. Since 2007, the mass gaming market has not seen the introduction of PE, but DRUPA 2016 will be presenting more on the topic of PE in games.

Research Methodology

The outcome of this study are projections as to where the industry is headed, and what technologies are expected to be implemented in printed games. This was made possible by following the following steps, with the objectives in clear view.

Objectives

The specific objective of this study was in two parts. The first part was to determine current design and production practices in the development and manufacturing of board and card games. The second part was the determine the probability of the use of developing technologies thereof in the development and manufacturing of board and card games.

Samples Studied

There were five specific samples studied. The first sample group were game publishers, primarily hobby, American specialty, and European companies. The second sample group were game manufacturers who produced cards, boards, and tokens. The third sample group were game designers, experiencing

the publishing and manufacturing process. The fourth sample group were graphic designers, who designed short-run games. These groups were studied through surveys and interviews, conducted over email and by phone. The fifth sample group were games themselves, through print analysis, ranging from mass-market to hobby, American specialty, and European sixth sample group were San Luis Obispo area gamers who participate in Cal Poly gaming clubs Game Theory and PolyCon, ranging in age from 17 to 60. The survey questions are in Appendix 1.

Data

Qualitative data was collected from surveys and interviews of game publishers, manufacturers, game designers, and graphic designers, and from print analysis of board games. Surveys and interview questions varied between sample types, but the first focus was on the development of graphic design in games, and how it progressed through the workflow, through production, and into stores. The second focus was whether that company or individual knew anything about current and developing technologies, and if they were going to implement these technologies in their own games. Print and substrate analysis of board and card games were conducted with a 16x magnifying loupe under standard fluorescent lighting.

Analysis

After the data was collected, the two different data types had to be sorted separately. Survey data was sorted according to individual or company, game type, and question type. The print and substrate analysis data was sorted according to game, game type, type of printing, type of substrate, and any specialty finishes. Both sets of data were developed into a survey about game manufacturing and the game development process. Both sets of data were also used to create a graphical representation of the study.

Results

Industry Surveys

A total of 23 publishers, manufacturers, and developers were contacted. Out of that number, 15 responded. Out of that, 10 answered the survey; the other 5 considered the information requested to be confidential and trade secrets. The surveys had little variation - they were worded to be specific to the segment of the game industry. An overview of the responses is in Appendix 5.

Publishers

The publishers participating in the survey were small to medium independent hobby, American specialty, and European game publishers. Most publishers had little to no control over substrate, inks, and process, and chose industry standards. A few were unaware of PE and AR, and most were not interested in publishing games implementing either. A few publishers listed cost as a prohibitor to researching games implementing either. A member of AMIGO Spiel + Freizeit GmbH's (Amigo) Graphics and Development department, Markus Wagner, provided the most in-depth answers of all the

publishers. Through correspondence with Mr. Wagner, it was discovered that another company, Ravensburger, had brought a PE game to market in 2003, as mentioned in the literature review. In response to whether Amigo would consider using PE, if and when the price of manufacturing drops, Mr. Wagner responded “Certainly, if it suits the game mechanism.” This was a feeling most echoed in the other responses the survey received, after hesitations over cost. The full survey response is in Appendix 4.

Manufacturers

The manufacturing process was no different than expected or learned about in the literature review. Most manufacturers would not respond to inquiry. For many, PE and AR are not relevant processes, as they are not affordable for publishers. Manufacturers did not express an interest in learning how to develop these methods, as they are not demanded by the publishers.

Developers

Developers often did not design their games with an eye toward developing technologies. Only one developer noted an interest in developing PE and AR games in the future, when presented with the capital to research them. Sam Lyons, developer of the Kickstarted game Day Trader, went to great lengths to produce an entertaining and beautiful game, and from his responses to the technology portion of the survey, researched all of his options. About implementing AR, Mr. Lyons said “Not in the existing games, but I have thought about implementing it for rules displays and functions of squares on the board,” and as to whether he is making games using AR, “Not at this time but if there is a need that could benefit from AR I would love to implement it into future games.” Mr. Lyons said about implementing PE, “Not in my existing game but I did consider it. I decided to form a base with a traditional package then possibly expand into other realms such as PE,” and about developing future PE games, “I have no plans in the works but will always keep every outlet or opportunity open for future needs should there be one.” The full survey response is in Appendix 4.

Print and Substrate Analysis

Most of the board games analyzed used low quality materials, and which made them cheap to produce. Many of these were produced in short runs, so minimizing material cost is logical. A few games had quality paper, card stock, and board materials, and they were also some of the better-selling games. Only a couple of games had spot colors, and it was to enforce a brand. One game was a case of the game mechanics influencing the materials: Cthulhu Gloom. Following the rest of the Gloom line of games, the cards are transparent with symbols relating to the game printed on one side. These cards are meant to stack, and graphics covered by the top card are considered canceled out. This does show that publishers will seek out different materials for their games, provided there is a sound reason for them. In the case of the Gloom series, the transparency of the cards adds to the play of the game, and is not merely a gimmick.

The average modern playing card in a 52-card, four-house deck is made of a medium weight card stock that is partially plastic. This stock is not so light that they do not rebound with a little bending, and not so heavy that they cannot bend at all. They are often given a linen or calendered finish for better handling. The boxes are often simple cartons with a semi-gloss finish, but art decks can have a linen, embossed, or raised ink finish. A Magic: The Gathering (MTG) playing card was examined because it was rumored to have a special anti-counterfeiting and rigidity feature - a layer of blue plastic. A card was peeled open and it was revealed to have a blue layer of something sandwiched inside of the card. This blue layer is incredibly thin and looks more like a coarse weave of paper, but may still add rigidity to the card. It is hard to imagine how this acts as an anti-counterfeiting measure, as it is hardly visible without tearing open the card itself - and the most valuable cards range in the thousands of dollars.

An overview of the analysis is in Appendix 6.

Conclusion

PE has been used and will be used as it becomes more economical and as it suits the game mechanics. As AR grows and develops, it is more readily used because it is a cheaper investment. AR is not likely to eclipse the actual board game, as it is a tactile novelty and escape.

Gamers older than 40 have expressed a disinterest in games using either technology. For them, playing board and card games are very social activities, and they participate in them (organizing board game nights and the like) to get together with their friends, play, and chat. To these older gamers, games with electronics (like video games) are typically experienced as a single player, like the original arcade games and first role playing video games. They imagine board and card games integrating electronics to be gimmick-filled, rather than a tool for entertaining gameplay.

Gamers younger than 40 indicate an interest in incorporating electronics through PE and AR. For these players, electronic games are more often than not social experiences, either massive multi-player online games or multiplayer cooperative or fighting games. These gamers have created video game nights in the fashion that older generations have board game nights. Live area network parties (LAN parties) require participants to bring their

own computer, and everyone hooks into the same system to play with each other on their own devices. Players can of course accomplish the same goal, playing with friends, by creating private parties and utilizing a real-time voice communication program. Still, players are drawn to play next to each other, talk in real time without having to hit buttons, and share Doritos and Mountain Dew.

The driving factor as to whether game publishers and developers implement PE or AR in their games, and whether printers will need to develop these technologies further for manufacturing games, is whether the players want them. We see that players older than 40 are dismissive of such an idea because they view electronics in games to be isolating - even electronics in general. The very method the survey was distributed is an indication of how these different age groups view the use of modern technology in communication. To reach the older gamers, an email was sent through the clubs aliases, or they were asked in person. To reach the younger gamers, links to the survey were posted in their Facebook groups. The growing older population will be highly skeptical of such games, but the younger generations are already desiring a next level of play, and will even develop it themselves if the industry will not provide it for them.

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Appendix 1: Survey questions

Survey for Publishers

Graphic Design

As a larger game publisher, you have your own graphic design department - but at one time, you were a small publisher. What are some of the procedures associated with contracting with independent graphic designers, what are some noticeable differences between in-house and contracted, and how did you make the transition?

What information are graphic designers given when they set out to do the graphics for a game (ex, do they play the game, speak to the creator)?

What design considerations must graphic designers take into account when making game graphics?

Could you provide an example of your branding guidelines?

Printing

Do you have your own print, packing, and/or distribution facilities (owned by Wizards or Hasbro), or do you contract with a printer/

packager/distributor? If so, which company?
Which process(es) do you use to print your cards (specifically, MTG)?
How did you come to choose this process?
Are your inks chosen for any particular reason (ex, spot colors)?

Substrate

What card stock do you use?
What kind of properties does this stock have?
How did you come to use that stock?

Technology trends (R&D)

Is your company aware of augmented reality (AR)?
Are you planning on implementing AR in existing games?
Are you planning on building new games using new mechanics that are made possible with AR?
Is your company aware of printed electronics (PE)?
Are you planning on implementing PE in existing games?
Are you planning on building new games using new mechanics that are made possible with PE?

Survey for Manufacturers

Printing

Which printers, packagers, and distributors did you contract with?
Which process(es) do you use to print your cards/boards/laminate?
Did you come to choose this process?
Are your inks chosen for any particular reason (ex, spot colors)?

Substrate

What card/board/laminate stock do you use?
What kind of properties does this stock have?
How did you come to use that stock?

Technology trends (R&D)

Are you aware of augmented reality (AR)?

Are you planning on implementing AR in existing games?

Are you planning on building new games using new mechanics that are made possible with AR?

Are you aware of printed electronics (PE)?

Are you planning on implementing PE in existing games?

Are you planning on building new games using new mechanics that are made possible with PE?

Survey for Game Developers

Thank you for being willing to participate in my senior project! If some of these questions make you scratch your head and say “These don’t really apply to me, why is she asking this? This seems canned...” well, that’s because it is. For consistency in research, I need to ask everyone the same questions. I also understand if you are not at liberty to talk about the manufacturing process (even though that’s the process I really want to know about).

Graphic Design

Did you do the design yourself or hire a designer or design studio?

What information did you give the graphic designer(s) do the graphics for your game/deck (ex, do they play the game, speak to the creator)?

What design considerations must graphic designers take into account when making game/deck graphics?

Were there branding guidelines to follow, and if so, could you provide an example of your branding guidelines?

Printing

Which printers, packagers, and distributors did you contract with?

Which process(es) do you use to print your cards/boards/laminate?

Did you come to choose this process?

Are your inks chosen for any particular reason (ex, spot colors)?

Substrate

- What card/board/laminate stock do you use?
- What kind of properties does this stock have?
- How did you come to use that stock?

Technology trends (R&D)

- Are you aware of augmented reality (AR)?
- Are you planning on implementing AR in existing games?
- Are you planning on building new games using new mechanics that are made possible with AR?
- Are you aware of printed electronics (PE)?
- Are you planning on implementing PE in existing games?
- Are you planning on building new games using new mechanics that are made possible with PE?

Survey for Gamers

Have you played a card or board game that used printed electronics (circuits printed directly on a flexible substrate like paper; PE) or augmented reality (created by an application to apply computer-generated imagery over a camera image; AR)? Did you enjoy it? What did you think of it?

If you haven't had the opportunity, would you play a game using PE or AR? Why or why not? What advantages do you think it could have? What disadvantages? What applications do you see it being used in?

Appendix 2: Publisher Response

AMIGO Spiel + Freizeit GmbH (Markus Wagner)

Graphic Design

Do you have your own graphic design department? If not, what are some of the procedures associated with contracting with independent graphic designers?

Currently we are three people working in the graphic design department. We are mostly working on the technical side of things, meaning that we get the actual artwork for the games from freelancers. Our task is to check if the art fits the game's purposes and make necessary adjustments. Those adjustments can range from simply tweaking the measurements of the artwork to color adjustments.

We also check the technical side, if the artwork is fit for printing: Does it have the right color mode (CMYK)? Is the artwork not oversaturated with color (more than 300% of printing colors)? Are all fonts embedded? and so on. In rare cases we produce new artwork.

We put the artwork together with the texts from editorial in Adobe Indesign, Illustrator or Photoshop and produce the PDFs for the printers.

If we work with independent graphic designers regarding the technical

side of production they are contacted either through our editorial staff or our Product Management Unit. Normally these freelance artists will receive templates from us in Adobe Illustrator or Indesign.

What information are graphic designers given when they set out to do the graphics for a game (ex, do they play the game, speak to the creator)?

Normally our editors play the game with the artists, so they can get an idea what the game is about. Sometimes the creator of the game is involved too, sometimes not.

What design considerations must graphic designers take into account when making game graphics?

Form/Appearance follows function and every game component has to be easily distinguished. For example, the colors for each player have to be distinguishable. This should be self-evident but there are games that are not playable, because nobody cared for that.

Could you provide an example of your branding guidelines?

See the attached PDF as an example of a standard game box cover.
(Appendix 3)

Printing

Do you have your own print, packing, and/or distribution facilities, or do you contract with a printer/packager/distributor?

We mainly contract with different printers and packagers in Europe. On some occasions we have also worked together with companies in China.

If so, which company?

Mainly we work with the Companies Ludofact in Germany (www.ludofact.de) with their asian Branch Ludofact Asia and with Carta Mundi in Belgium (www.cartamundi.com).

Which process(es) do you use to print your cards?

Standard CMYK printing

How did you come to choose this process?

Mainly because they are the standards in the German game industry.

Are your inks chosen for any particular reason (ex, spot colors)?

Spot colors are mostly chosen for cost reasons. We mainly use them on the backs of our cards. The backs of our cards should not be confused with the fronts, so we use just one color for printing to make them easily distinguishable and it is a little cheaper.

Rarely do we use spot colors for special effects. Sometimes we have printed the titles of our games on the box with metallic colors to make them stand out.

Substrate

What card stock do you use?

We use Corona Spielkartenkarton (Cardboard for playing cards) 300 g/m or Excellent Karton 400g/m

What kind of properties does this stock have?

See above.

How did you come to use that stock?

Mainly because they are the standards in the German game industry.

What kind of litho-laminate do you use?

We do not. The artwork is printed on Ettikettenpapier Leinen (Label paper with linen texture) 100 g/m which is then laminated to the cardboard of the boxes. So it is not exactly litho-lamination.

What kind of properties does this stock have?

See above.

How did you come to use that stock?

Mainly because this is the standard in the German game industry. In Germany traditional card and board games are sold in tuck boxes. The linen texture of the paper gives a valued appearance to the game.

Technology trends (R&D)

Is your company aware of augmented reality (AR)?

Yes, we are aware of the technology, but as of now we have not used it for game mechanics.

Are you planning on implementing AR in existing games?

If it can be called "Augmented Reality", we are using the QR-Codes on our boxes to guide the customers to videos on youtube, where the rules to our games are explained.

Are you planning on building new games using new mechanics that are made possible with AR?

Not this year, but nobody can tell what the future brings.

Is your company aware of printed electronics (PE)?

Yes, we were approached some years ago in the past, but we could not realize the project because of the high costs at that time.

Are you planning on implementing PE in existing games?

No

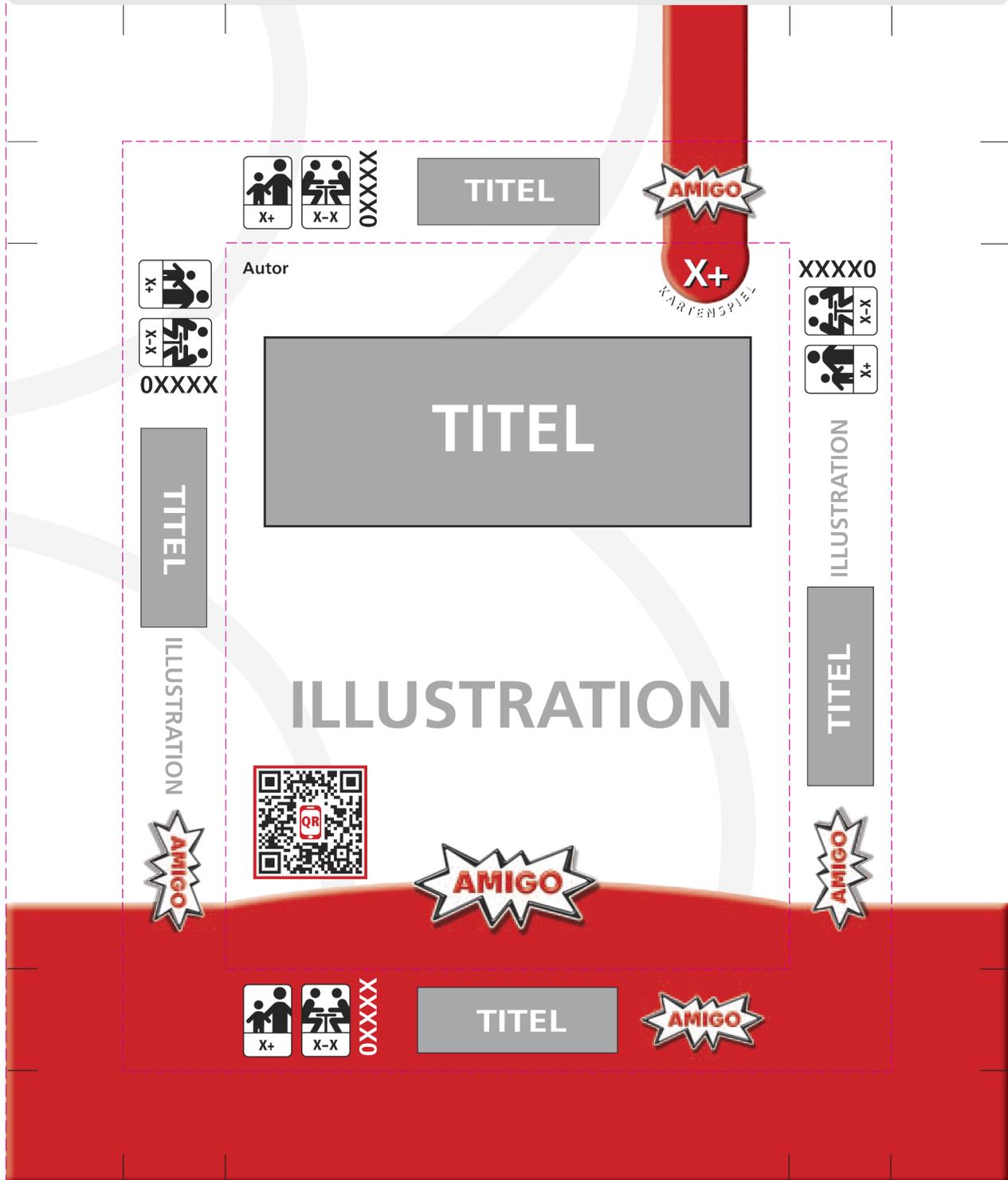
Are you planning on building new games using new mechanics that are made possible with PE?

Not right now.

Appendix 2: Publisher Response AMIGO Spiel + Freizeit GmbH (Branding Guidelines)

Art.-Nr. 0XXXX_XXXX
15/02/2013

A13_50 (Schachteloberseite)
94 mm x 121 mm x 17 mm



Appendix 4: Game Developer Response

Samir Lyon

Graphic Design

Did you do the design yourself or hire a designer or design studio?

The entire process is extremely relative to each part. When I came up with the idea I needed a mechanic to deliver it, when I came up with the mechanic of game play I needed a design to delivery it. I came up with a "wireframe" for the general design I needed in order for my mechanic to work to test the idea. At the beginning the design is very rudimentary, the only purpose design should serve is for testing. You don't want your design to be too distracting when testing but you don't put the polish on at this point. When it came time for the polish, after tons of testing, I hired a branding/graphic design studio to delivery it.

What information did you give the graphic designer(s) do the graphics for your game/deck (ex, do they play the game, speak to the creator)?

It's important to me to that the design studio feels like this is their game, to take ownership. I played it with them a few times and tried to explain in

great depth the ideas and mechanics, and my goals for the game as well as the intended audience, how/where I plan to sell it and anything else that might give them any kind of direction. I did not give them a direction, only my thoughts, I wanted them to have all the freedom they desired to create whatever they wanted. I hired them for a reason, because this is what they do, and I wanted them to do it, not me. They started with a logo for the title, that led to a general style that all the branding would be created after.

What design considerations must graphic designers take into account when making game/deck graphics?

Audience, mechanics, genre, styles of the period its based after, colors, goals of the creator, goals of the game itself, etc..

Were there branding guidelines to follow, and if so, could you provide an example of your branding guidelines?

The design studio handed me the branding guidelines after I displayed a general lack of awareness of how and why branding works. For example, I created a facebook page logo before they did, which they did not like at all. All should be aligned, coherent and connected and should lead without confusion back to the product.

Printing

Which printers, packagers, and distributors did you contract with?

I went through many revisions and boards along the way of testing, I used local printers for this due to the cheap price. Once I had a polished product I researched many manufacturers and received samples from 3. I picked one based on price, quality and customer service. The company I picked, Grand Prix International, does all the printing, packaging and will ship the games to my distributing warehouse. I picked the fulfillment center based on price and customer service - shipwire.

Which process(es) do you use to print your cards/boards/laminate?

All items are printed with offset printing technique.

Did you come to choose this process?

The designers insisted on this.

Are your inks chosen for any particular reason (ex, spot colors)?

Yes, 4 spot colors were chose for quality assurance by the design studio.

Substrate

What card/board/laminate stock do you use?

Standard board game stocks for game board and cards.

What kind of properties does this stock have?

Sturdy, good weight, quality

How did you come to use that stock?

Quality and costs

Technology trends (R&D)

Are you aware of augmented reality (AR)?

Yes.

Are you planning on implementing AR in existing games?

Not in the existing games, but I have thought about implementing it for rules displays and functions of squares on the board.

Are you planning on building new games using new mechanics that are made possible with AR?

Not at this time but if there is a need that could benefit from AR I would love to implement it into future games.

Are you aware of printed electronics (PE)?

Yes.

Are you planning on implementing PE in existing games?

Not in my existing game but I did consider it. I decided to form a base with a traditional package then possibly expand into other realms such as PE.

Are you planning on building new games using new mechanics that are made possible with PE?

(No reponse given)

Appendix 5: Overview of Industry Survey Results

Company	I do it myself	We do it in house	We use freelancers	Will not disclose	I don't know	I use whatever is standard	I will deviate from standard	Will not disclose	I don't know	I use whatever is standard	I will deviate from standard	Will not disclose	I don't know	We're working on it	It's too expensive	Will not disclose
Jolly Roger Games																
Rio Grande Games																
DV Giochi																
TerrorBull Games																
Hans im Glück Verlags GmbH																
Fantasy Flight Games																
AMIGO Spiel + Freizeit GmbH																
Atlas Games																
Wizards of the Coast (Hasbro)																
United States Playing Card Company																
Days of Wonder																
Ravensburger USA Panda																
Game Manufacturing																
Misc Goods Co.																
Sanit Lyons																
Michael Minds																

Appendix 6: Print Analysis Overview

Game: Publisher *Type, Printing process, Inks, Stock, Special properties*
Choice analysis

Family Business: Mayfair Games Inc *Card game, Offset lithography, 4c, thin cardstock, n/a*

Cheap to produce in small quantities.

Zombies!!!: Journeyman Press *Card, token, and bit game, Offset lithography, 4c thin cardstock and light board, n/a*

Cheap to produce in small quantities.

Legends of the Three Kingdoms: Zik Games *Card game, Offset lithography, 4c and spot gloss on box, thin high gloss cardstock, n/a*

Cheap to produce in small quantities.

Cthulu Gloom: Atlas Games *Card game, Offset lithography, 5-6c, light-weight plastic, transparent material choice*

The transparent cards support a game mechanic.

Kung Fu Samurai on Giant Robot Island: Z-Man games, *Card game, Offset lithography, 4c and blue spot color, thin cardstock, n/a*

Cheap to produce in small quantities.

ShipWrecked: Out Of The Box *Card game, Offset lithography, 4c, normal-weight glossy cardstock, n/a*

Cheap to produce in small quantities.

Stone of Fate: Cosmic Wombat *Card game, Offset lithography, 4c, normal-weight cardstock, n/a*

Cheap to produce in small quantities.

Monkeys on the Moon: Eight Foot Llama *Card and board game, Offset lithography, 4c thin cardstock and light board, n/a*

Cheap to produce in small quantities.

Monty Python Flux: Looney Labs *Card game, Offset lithography, 4c, normal-weight cardstock, n/a*

Cheap to produce in small quantities.

Pigasus: Gamewright Incorporated *Card game, Flexography, 4c with blue and peach spot colors, normal-weight cardstock with linen texture, n/a*

Publisher considered heavy usage of the cards and chose a textured stock.

Space Hulk: Death Angel: Fantasy Flight Games *Card and token game, Offset lithography, 4c normal-weight cardstock and board laminate with linen texture, n/a*

Publisher considered heavy usage of the cards and chose a textured stock.

Royal Palace: Rio Grande Games *Card, token, and bit game, Offset lithography, 4c, Creme-colored heavy-weight cardstock and board laminate all with a textured finish, n/a*

Quality is conveyed in the heavy materials, all textured. An expensive game produced in long runs.

Nightfall: Martial Law: AEG *Card game, Offset lithography, 4c, Thin cardstock and a matte box, n/a*

A deck building game, with a base set and expansions. The box is sturdy and made of high quality materials as it is meant to last, with room for deck expansions. The cards are printed cheaply, probably in short runs.

Ascension: Chronicle of the Godslayer: Gary Games *Card, board, and bit game, Offset lithography, 4c, normal-weight cardstock a matte board laminate front with a linen-textured back laminate in a matte linen box, n/a*

Quality is conveyed in the heavy materials, all textured. An expensive game produced in long runs.

The Looney Bin: Numbskull games *Card and token game, Offset lithography, 4c thin cardstock and light board, n/a*

Cheap to produce in small quantities.

Oregon: Rio Grande Games *Card, board, token and bit game, Offset lithography, 4c, heavy-weight cardstock and board all with a textured finish, n/a*

Quality is conveyed in the heavy materials, all textured. An expensive game produced in long runs.

Cosmic Encounter: Fantasy Flight Games *Card, board, and bit game, Offset lithography, 4c, heavy-weight cardstock and board all with linen texture in a linen box*

Quality is conveyed in the heavy materials, all textured. An expensive game produced in long runs.

Cash'n Guns: Repos Production *Card, board, and prop game, Offset lithography, 4c, heavy-weight cardstock and high gloss board, high quality printing*

A medium-priced game made using materials on the pricey end of cheap, with curiously high print quality.

Shootin' Ladders: Smirk & Dagger games *Card, board, token and bit game, Offset lithography, 4c, heavy-weight cardstock and high gloss pebble-textured board, n/a*

A medium-priced game made using materials on the pricey end of cheap.

Appendix 7: Gamer Survey Response

“No I have not, but it sounds like a really cool concept. I would imagine the best part about an augmented reality game would be built in multiplayer elements, A really cool AR card game could work something like a mix of pokemon and magic where the camera identifies the cards and projects 3d renditions of the item or creature the card represents, and possibly have them make actions when the cards are used in game. Disadvantage would of course be primarily cost barriers, not many board or card games have an entering cost more than 50-60 dollars bought new but the amount of money needed to develop, and utilize these technologies could result in much more expensive games. However the idea of a gameboard that lights up when things happen or outputs text directions or descriptions could be worth it. Something like a game of risk where the board lights up and displays numbers based on events could be extremely fun if well implemented.”

“I like AR, I think it's neat. At the same time, it's not a convenient way to play a game, which is why it probably doesn't have a future in the mainstream until we develop more efficient and widespread mobile computer hardware.

Especially batteries. I have played one or two games, but I stopped because they were difficult to manage and irritating to play. when I go out somewhere, it's to do something other than manage my stupid virtual facebook game.”

“I would likely enjoy playing such a game, assuming its reasonably affordable.”

“I would like to play a game that utilizes such things, as I think it opens up many doors as far as design is concerned. Disadvantages would be slightly increased manufacturing costs for PE or increased development fees for AR. Both would also have a reliance on smartphones, but that is becoming less of an issue. One use of AR that I've been interested in is Tek Recon on Kickstarter.”

“I'm not sure I fully grasp all the implications, but I like the idea of more interactive game pieces. This could be especially cool in a science-themed setting.”

“I would play one if it increased players interactions. Or just for novelty. Long lasting game play would have to have a social aspect.”