Notes on Operations

Don't Just Roll the Dice

Simple Solutions for Circulating Tabletop Game Collections Effectively in Your Library

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Tabletop game collections in libraries raise questions regarding standards in collection maintenance. This paper details the University of North Texas Media Library's study to determine best practices and standards for preserving and processing tabletop games for circulation. The authors list and describe the different methods of processing and preserving the games Ticket to Ride and Betrayal at House on the Hill and the project plan to test different copies of each game in circulation. After a period of circulation for each copy, the authors assess each method through an evaluation of damage and loss in relation to time and money spent on preservation and processing. The paper also describes a study of damage intended to simulate the effects of possible hazardous materials and scenarios during a typical play session, along with an assessment of damage to the test pieces. The authors outline the preservation and processing methods they currently use based on their findings from this research.

An increase in tabletop game collections in all types of libraries has led to questions about library practices related to these materials, specifically preservation, processing, and circulation. Research related to game collections in libraries is also growing, but there is still a lack of information specifically related to tabletop games. The University of North Texas (UNT) Media Library began collecting games in 2009 to support campus curricula and student engagement. The tabletop game collection has expanded in the past few years to 580 games. When the collection was small, it was restricted to campus use only with limited circulation. The growth of the collection resulted from student funds that required reducing restrictions and allowing regular campus circulation. A research project was developed to determine best practices and standards for preserving and processing tabletop games for circulation in the UNT Libraries. Some of the unknowns that the library wished to examine were the potential longevity of a tabletop game, preservation processes that might increase this longevity, and processes that might ease circulation time and limit loss. In 2015, the availability of a UNT Grant made it possible to investigate these unknowns.

Project Description

At the beginning of the project, the UNT Media Library tabletop game collection consisted of 175 games in closed stacks for campus use only. The authors, a preservation librarian, cataloger, and circulation desk manager, proposed a research project to assess different preservation methods for tabletop games to ensure their longevity as a circulating collection. This project was also conducted to determine

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Manuscript submitted August 8, 2017; returned to authors for revision September 28, 2017; revised manuscript submitted November 3, 2017; accepted for publication December 26, 2017.

The authors presented on this topic at the American Library Association's 2016 Annual Conference for the Association for Library Collections and Technical Services.

which circulation processes and procedures were necessary to reduce the loss of pieces without causing undue burden to circulation desk staff.

This project is beneficial to libraries because there are no comparable studies available to determine the best practices or standards for tabletop game collections. Currently, most of the information related to the subject of preserving games is anecdotal and posted on Facebook or game forums.

Literature Review

The published literature about game collection management is sparse. Nicholson's "Go Back to the Start: Gathering Baseline Data about Gaming in Libraries" included a question about game circulation but none about processing.[1] A more recent survey about tabletop collections, "Arranging the Pieces: A Survey of Library Practices Related to a Tabletop Game Collection," included questions related to barcoding and processing.[2] Survey responses indicated the need for best practices to help guide libraries with tabletop collections. *Libraries Got Game: Aligned Learning Through Modern Board Games* by Mayer and Harris includes a section on how they manage and loan their collection at Genesee Valley.[3] In his paper "Dungeons and Downloads: Collecting Tabletop Fantasy Role-Playing Games in the Age of Downloadable PDFs," Sich briefly discusses the circulation of roleplaying publications and ensuring completeness of a set.[4] Another paper, "The Protean Challenge of Game Collections at Academic Libraries" by Cross, Mould, and Smith includes a summary of the reasons why tabletop games can be difficult to collect.[5] No concrete practices are discussed or evaluated in any of these papers.

While the authors did not find anything in the professional literature concerning the preservation of actively circulating tabletop games, there is a wealth of suggestions from non-professionals found in blog posts and gaming forums. Some suggestions, while excellent, are not options that a library can easily implement for a circulating collection. These include the use of acrylic sheets to cover maps and delicate boards, which would be unwieldy to store and transport, plus implementing strict no food or drink policies, which would be impossible for the authors to enforce.[6] Another recommendation was to apply a layer of contact paper to the surface of game boards to serve as a barrier against wear.[7]

GeekInsight, of the blog *Giant Fire Breathing Dragon*, suggests storing games flat, rather than on edge, as a protection against game board warping.[8] Coating game miniatures with a clear acrylic as a sealant appears to be a common practice in the roleplaying game community, where user Sean K. Reynolds commented on a Paizo forum thread that the use of Future, now known as Pledge Floor Care Finish, made miniature figurines exceptionally durable.[9] One blog, *The Game Aisle*, cited a preservation professional, Lindsey Smith, on the care and preservation of old board games. Her recommendations regarding climate control and archival storage are valid suggestions. However, her storage and care suggestions are much more appropriate to a home collection than to an actively circulating library collection.[10]

Project Plan

For this project, the term "preservation" refers to the materials used to reduce wear and tear on each game, such as card sleeves, clear contact paper, and cloth tape on box corners. "Processing" refers to how the games are barcoded and labeled to circulate efficiently and to prevent loss. The authors hypothesized that if minimal preservation and processing methods are introduced, a tabletop game collection can circulate to the public efficiently and effectively. The experiment covered the spectrum from no preservation or processing to full preservation and processing. This broad spectrum allowed the authors to assess the success of different preservation techniques and processing methods as these games circulated throughout the research time period.

Four new copies of two different game titles were purchased for this research project. The project team chose Ticket to Ride (TR) and Betrayal at House on the Hill (BHH) because of the variety of boards and pieces in each game (see figures 1 and 2). Each copy of each title received different preservation and processing methods. The eight games were available for checkout and play for eight months. After each game was checked back in, it was assessed for damage and loss. The results were evaluated to determine the most cost-effective and efficient way to circulate board games with the least amount of loss and minimal wear and tear. This project ran from July 15, 2015, through May 1, 2016.

Preservation

The primary concerns for the longevity of the games centered on the boxes' structural integrity and water damage to their contents. While the authors did not anticipate damage to specific game pieces, they tested various techniques for most components of each game. The process of choosing which preservation methods to employ required creativity and a willingness to extend beyond typical preservation and conservation methods. Because the goal was to prolong the usable life of an actively circulating collection, the authors chose some unorthodox methods that would not be appropriate for rare or valuable materials. Some methods, including the use of pamphlet binders, polyester L-sleeves,

Figure 1. Ticket to Ride board game

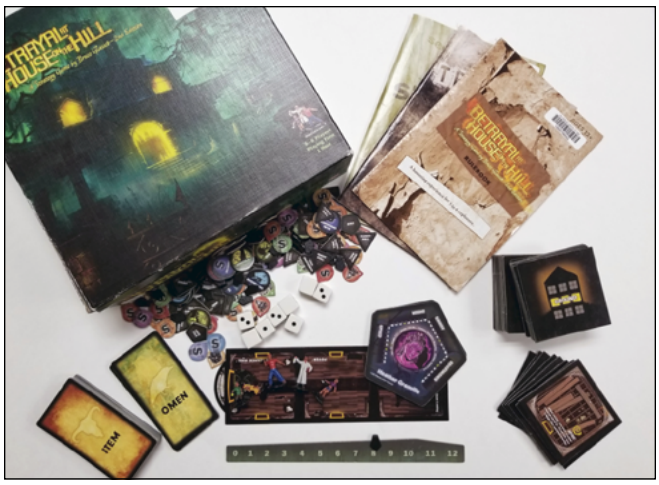

Figure 2. Betrayal at House on the Hill board game

and Velo binding, were selected based on common preservation practices for other types of materials such as books or music scores. Other methods, such as spraying pieces with a water-resistant spray, adhering tape or book cloth to box corners, and the use of contact paper on board pieces, were tested as potential solutions for observed damage to other games. Additional methods employed were chosen based on their use within the gaming community. These included using sleeves to protect cards from sticky fingers or spilled drinks plus the less commonly used practice of coating miniatures and game movers with a protective wax.

The preservation librarian and her team of student assistants carefully applied the techniques listed in tables 1 and 2 to the various copies of each title. One copy of each title received no preservation treatment, while the other copies received a variety of types and intensities of activity. Due to the innate differences in the types of game pieces for each title, it was impossible to apply consistent preservation treatments to each of the titles. One area with consistency between the copies of each title was reinforcement of the corners of the game boxes with tape or book cloth. Whenever an exterior corner was reinforced, the authors used a three-inch-wide strip of F-grade buckram material that extended up the side and covered one inch on the top surface of the box. When covering interior corners, Arrestox B-Cloth was used because it approximated the thickness of the original box cover, and it was cut closely to fit the height of the box sides without overlapping the original cover or extending to the top or bottom of the boxes.

As stated earlier, copy one of each title received no preservation treatment. For copy 2 of TR, the authors used water-resistant spray on the board, movers, and cards. The instructions were placed in a polyester L-sleeve, and the outside corners of the game box lid were wrapped with 3M acid-free book tape.

Water-resistant spray was applied to the movers and action cards for BHH copy 2 while the board-stock room tiles, character cards, and tokens each had polyvinyl acetate (PVA) painted on the exposed edges of the game components. Game instructions and booklets had staples removed and were sewn into end sheets. The exterior corners of the game box lid were wrapped with acid-free book tape.

For copy 3 of TR, cards were placed in sleeves and board edges were painted with PVA. The authors coated the wooden movers with Johnson's Paste Wax and sewed the instructions into end sheets. The exterior corners of the game box lid were covered in scraps of buckram book cloth adhered using PVA, and the interior corners of the box base were reinforced using the thinner B-grade Arrestox B-Cloth.

A water-resistant spray was applied to the tokens, room tiles, and character cards of copy 3 of BHH. Instructions and game booklets were Velo bound. Playing cards were sleeved, and the plastic movers were coated in paste wax. The external corners of the game box lid were covered with buckram and the interior box base corners with Arrestox B-Cloth.

The most time-intensive preservation methods were reserved for copy 4 of each title. TR had the top of the game board covered with contact paper, the movers dipped in Pledge Floor Care Finish, the instructions sewn into a pamphlet binder, and the cards sealed inside of card sleeves using a Polyweld B-20 sealing machine. The external corners of the box lid were reinforced with buckram while the interior corners of both the lid and base boxes were covered with Arrestox B-Cloth.

For copy 4 of BHH, the character cards, room tiles, and other board-stock tokens were covered in contact paper. The contact paper completely covered the character and room tiles, extending around to cover the edges of these pieces, while the much smaller and oddly-shaped tokens

Table 1. Ticket to Ride Preservation Methods

	Board	Movers	Cards	Box	Instructions
Copy 1	Nothing				
Copy 2	Water-resistant spray			Tape exterior box corners	Polyester L- sleeve
Copy 3	Coat edges with PVA	Paste wax	Sleeve cards	Buckram on exterior lid corners & Arrestox B-cloth interior base corners	Sew into end sheet
Copy 4	Contact paper	Pledge floor care finish	Seal cards into sleeves	Buckram on exterior lid corners; Arrestox B-cloth on interior lid & interior corners	Sew into pamphlet binder

Table 2. Betrayal at House on the Hill Preservation Methods

	Room & Character Cards	Tokens	Cards	Movers	Box	Books/Instructions
Copy 1	Nothing					Sew
Copy 2	Coat edges with PVA		Water-resistant spray	Water-resistant spray	Tape exterior lid corners	Sew into end sheet
Copy 3	Water-resistant spray & coat edges with PVA	Water-resistant spray	Sleeve cards	Paste wax	Buckram on exterior lid corners & Arrestox B-Cloth on interior base corners	Velo blind
Copy 4	Contact paper		Sleeve cards	Pledge Floor Care	Buckram on exterior lid corners; Arrestox B-Cloth on interior lid & interior base corners	Sew into pamphlet binder

had contact paper adhered only to one flat surface of the pieces. Cards were sleeved, though these sleeves were made in such a way that the authors were unable to seal them. Instruction booklets were sewn into pamphlet binders, movers were dipped in Pledge Floor Care Finish, and the base box was reinforced with book cloth, except for the exterior corners.

Processing and Circulation

As previously stated, "processing" refers to how the games are barcoded and labeled to circulate efficiently and to prevent loss. The time to provide copy or original cataloging of the game was not included in the study. The extent of processing ranged from minimal, involving a single barcode and call number label for tracking, to full processing in which every piece of the item was labeled, marked, and bagged (see table 3). The time required to process each item was noted to determine the efficiency of processing versus its effectiveness in minimizing loss or damage.

Item records representing copies of each title were attached to a single bibliographic record. The extent of the item records was different for each copy. Copy 1 of each title received a barcode on the outside of the box lid and a call number label. This barcode was for a single item record in the library system that tracked circulation. The time needed to process each copy one title was seven minutes.

Circulation for this item required a single scan of the barcode on the box lid for checkout. After check-in, the game was examined, and any damage was recorded for this project. Pieces for copy 1 were not counted until the end of the research project. This would help determine what type of inventory control at check-in would affect loss rates.

Copy 2 also had a single barcode and item record. Additional processing included bagging the pieces and labeling the bags with the number of pieces in each bag. The time to process each copy 2 title was fifteen minutes. Circulation for this item also required a single scan of the barcode on the box lid for checkout. After check-in, the game was examined for damage. Pieces for copy 2 were counted in mid-November, mid-March, and at the end of the project.

Copy 3 was barcoded on the box lid, piece bags, card bag, and board for TR. Each of these barcodes correlated with an item record in the system. The volume field included

Table 3. Processing, Cataloging, and Circulation for Both Titles

	Processing			Cataloging	Circulation
Copy 1	Barcode on box lid only			Single item record (box lid barcode)	Count pieces at end of project (yearly)
Copy 2	Barcode on box lid only	Pieces bagged & labeled with # of items		Single item record (box lid barcode)	Count pieces at 4 & 8 months
Copy 3	Barcode on box lid, board (TR), each bag of items	Pieces, cards bagged & labeled with # of items, bags & TR board barcoded		Item record for box lid, each bag of items, board (TR) & instructions	Count pieces every month
Copy 4	Barcode on box lid, each bag of items, board	Pieces, cards bagged & labeled with # of items, bags & TR board barcoded	Cards, board (TR), tiles, & pieces labeled with "UNT"	Item record for box lid, each bag of items, board (TR) & instructions	Count pieces at every return

the component type, e.g., board, trains (green), etc. Processing time for each copy 3 title was thirty minutes. Checkout for copy 3 required circulation desk staff to scan the box lid barcode, all bag barcodes, and the board barcode for TR. After check-in, the game was examined for damage. Copy 3 had the pieces counted at the end of each month.

Copy 4 was also barcoded on the box lid, piece bags, cards bag, and board for TR. Each of these barcodes correlated with an item record in the system. The volume field listed the item, e.g., board, trains (green), etc. The additional step for copy four was to mark "UNT" on every single item in the game with a marker. Processing time for each copy 4 title was fifty minutes. Checkout for copy 4 again required the circulation desk staff to scan the box lid barcode, all bag barcodes, and the board barcode for TR. Following check-in, the game was examined for damage and all of the pieces were counted.

Since the UNT Media Library has closed stacks, this project did not test ways to house games to reduce loss for items on open shelving. Patrons must request the item at the circulation desk to check out items from the Media Library. Staff retrieve the item and check it out to the patron. There is no self-checkout. Patrons are not allowed to return games to the drop box.

Once all the preservation and processing was complete, the authors were ready to circulate the games. The goals were to circulate the games a similar number of times, determine damage and loss, take photos and record statistics to determine the most efficient processes, and determine best practices for managing a game collection efficiently and effectively.

At the start of the circulation phase of this project, the Media Library let patrons and staff know that the research project copies existed and promoted their use through Facebook posts, digital signage, and a staff newsletter. Copies were rotated to ensure that each item was circulated at least fifteen times. Library staff were guided in how to circulate and handle each copy with check-in pop-up messages in each item record.

Circulation results: Damage and Loss

The damage results after eight months of circulation were graded on a scale from zero to three where zero equals no damage, one equals minor damage (still usable), two equals moderate damage (may impede game play), and three equals significant damage (unusable). Lost pieces were tallied (see table 4).

TR copy 1 took seven minutes for preservation and processing. It circulated twenty-five times. Pieces were counted at the end of the project. The damage to this copy was minor, with the lid torn open along the corner seam and a tear on the first page of the instructions. One train car was lost from this game.

BHH copy 1 took seven minutes for preservation and processing. It circulated twenty-two times. The pieces were not counted for loss until the end of the project. The damage to this item was minimal. There were minor abrasions on the box lid edges and corners and minor wear on the cards. One room tile, one card, and one token were lost. The authors did not bag the pieces in this game, but a patron returned it with bagged pieces. This bag was discarded by the circulation desk manager.

TR copy 2 took about one and a half hours for preservation and processing and was circulated sixteen times, with pieces counted mid-November and again in mid-March. Damage to this copy was minor, with moderate damage to the top right corner of the box. It was torn along the edge through the cardboard along the seam. The back of the game board is stained and scratched. None of this damage impedes play. Loss for this game amounted to two train cars.

BHH copy 2 took about six and a half hours for preservation and processing and was circulated fifteen times. Pieces were counted in mid-November and again

in mid-March. The damage to this game was minor, with abrasions on the edges of the lid. The PVA on the edges of the pieces, meant to prevent liquids soaking into the board should there be a spill, was noticed by patrons as it added a bit of tackiness, causing some pieces to temporarily stick together. These patrons relayed this information to our front desk staff at check-in. One room tile and one item token were lost with this copy.

Copy 3 required more extensive processing. TR took two hours for preservation and processing and was circulated fifteen times. Pieces for this copy were counted each month. There was no damage to this copy. There was minor card sleeve bending at the corners of the sleeves most likely from storage in the box. Loss included two train cards and one train car.

BHH copy 3 took about five and a half hours to preserve and process. Adding the preservation processes was quicker for this copy due to practice. It circulated eighteen times and the pieces were counted each month. The damage consisted of minor abrasions on the box edges. The loss for this copy was one token and one room tile missing.

Copy 4 received extensive preservation and processing—TR copy 4 took about three hours. The pieces for this copy were counted at each check-in. This copy circulated fifteen times. There was no damage or loss with this copy of the game.

BHH copy 4 took almost twenty-six hours for preservation and processing. It circulated sixteen times and pieces were counted at each check-in. There was no damage or loss for this copy of the game.

All of the circulating copies suffered very little damage. The items that were preserved and processed to the fullest extent did not suffer any damage or loss, but the goal was not only to minimize damage and loss but also to use staff time effectively. The authors question if the time spent to process items fully versus loss rate was worth it. TR has 375 pieces. The highest loss rate was .8 percent (3 pieces). The salary cost to process this game to the fullest extent equals the cost of a new game. BHH has 328 pieces. The highest rate of loss for this game was .91 percent (3 pieces). The salary cost to process this game to the fullest extent equals the cost of twelve new games. Is the time and salary costs required to minimize damage worth it? Damage to all the game boxes could be repaired. All of the games remained playable despite the lost pieces (see table 5).

The results of this research show that there is no real benefit to preserving and processing a circulating tabletop game collection to the fullest extent. The loss rate is negligible between no processing and full processing. Counting the pieces at each return alerts the library if something is missing, but does not decrease the loss rate substantially. Although the preservation processes seem to help prevent some damage, the labor cost to apply these methods negates any savings.

Table 4. Damage and Loss Results

Game	Time to Preserve & Process (hrs)	Circulation Count	Pieces Lost	Damage
TR copy 1	0.12	26	1	minor
TR copy 2	1.5	16	2	minor
TR copy 3	2	15	3	minor
TR copy 4	2.92	15	0	minor
BHH copy 1	0.12	22	3	minor
BHH copy 2	6.7	15	2	minor
BHH copy 3	5.58	18	2	minor
BHH copy 4	25.92	16	0	minor

Table 5. Cost/Benefit

Game	Time (hrs)	Salary Cost to Process (USD)*	Pieces Lost	% Loss	Cost of New Game (USD)**
TR copy 1	0.12	1.56	1	0.27	33.99
TR copy 2	1.50	19.50	2	0.53	33.99
TR copy 3	2.00	26.00	3	0.80	33.99
TR copy 4	2.92	37.96	0	0.00	33.99
BHH copy 1	0.12	1.56	3	0.91	25.99
BHH copy 2	6.40	87.10	2	0.61	25.99
BHH copy 3	6.70	72.54	2	0.61	25.99
BHH copy 4	25.92	336.96	0	0.00	25.99

*Source: https://www.glassdoor.com/Salaries/library-assistant-salary-SRCH_KO0,17.htm

**Source: Cost of new game (www.amazon.com) July 2017

Additional Stress Testing

As noted above, the games received very little damage following eight months of circulation. At the conclusion of the project, a decision was made to test the preservation processes by exposing them to additional hazards. This controlled experiment would test each component by exposing them to several damaging substances for three different time periods. The box lid and instruction guide preservation procedures were also strength tested.

Most tabletop games have components made of different materials. Playing cards are pasteboard, which consists of multiple layers of paper or pulp. Tiles and tokens are often made of chipboard or punch board. Chipboard is layered and compressed and comes in various thickness. Tokens are also made of wood and plastic resin. The manufacture and quality of these items can affect a game's durability.[11]

The authors exposed each game component type (card, tile, mover, token) to water, a carbonated cola, and a store brand cheese dip and salsa. These products were chosen because they are the types of products that could be in close proximity to a game. Each item was exposed to these substances for thirty seconds, one minute, and five minutes.

No liquids were left on the cards. All of the liquid, salsa, and cheese was gently wiped off with a damp cotton cloth after each timed experiment and items were set to dry. This practice mitigated the damage for this research study, but may not reflect the behavior of patrons. Full damage was assessed after items were left to air dry. No attempt was made to flatten game cards, tiles, or tokens before fully dry.

The results were graded on a scale from zero to three, in which zero equals no damage, one equals minor damage (still usable), two equals moderate damage (may impede game play), and three equals significant damage (unusable). The durability of games depends on manufacturing quality, which undoubtedly affected the results of this experiment.

Cards

Card quality varies by game. The authors were unable to verify the exact card type for these games. TR by Days of Wonder is considered a high-quality game on Board Game Geek.[12] This game has paper (playing cards), wood, and plastic resin components. With this in mind, the game that received no preservation or processing procedures fared well during the stress testing. This game showed the most damage to the playing cards. Cards left in water and soda started to curl at thirty seconds and began to warp and split at one minute. The warping and splitting of the card layers was more pronounced at five minutes when wet. Full damage was assessed after the cards were left to air dry. Again, no attempt was made to flatten the cards before they were fully dry. After drying, the splitting was not noticeable but the cards were still warped. Although there is minor to moderate damage to the cards, they can still be used.

Cards left in salsa and cheese dip showed minor damage, with the cards slightly warped from the liquid in both of these food products after five minutes. Some cards still had a residue from the cheese dip even after they were wiped with a cloth. The damage was minor and did not affect the use of the cards in this game. The wooden tokens in TR showed no damage after this experiment. The plastic train tokens were not tested (see table 6).

BHH by Avalon Hills is manufactured with different components than TR. The first printing of the second edition of this game had warping problems, but the authors' copies were not a part of that print.[13] BHH has components that are paper (playing cards), chipboard, and plastic resin. The cards for copy 1 of BHH showed a little less damage than those in TR. The authors were not able to get specifics from the game company but believe that these cards have an additional coating that increases their durability. These cards showed minor damage such as warping at thirty seconds and one minute. The water and soda began to cause the layers to separate at the edge after five minutes, causing moderate damage. After air drying, all of the cards were still usable. The salsa and cheese caused less damage to these cards, with one card showing warping and some splitting at the edge after five minutes in the salsa. The splitting is not noticeable when the cards are dry. They remain slightly warped but all of them are still usable in the game.

Sleeving the cards mitigates the damage caused by water and soda but can increase the damage done by salsa

Table 6. Ticket to Ride Card Damage

	Type of Preservation	Water			Soda			Cheese Dip			Salsa		
		30s	1m	5m	30s	1m	5m	30s	1m	5m	30s	1m	5m
copy 1	none	1	1	2	1	2	2	0	0	0	0	0	0
copy 2	water-resistant spray	1	1	2	0	2	2	0	0	0	0	0	0
copy 3	sleeved	0	0	0	0	0	0	0	2	2	0	0	0
copy 4	sealed sleeves	0	0	0	0	2	0	0	0	0	0	0	0

Damage scale: 0 (no damage), 1 (minor damage), 2 (moderate damage), 3 (significant damage)

Table 7. Betrayal at House on the Hill Card Damage

	Type of Preservation	Water			Soda			Cheese Dip			Salsa		
		30s	1m	5m	30s	1m	5m	30s	1m	5m	30s	1m	5m
copy 1	none	1	1	2	0	1	2	0	0	0	1	0	0
copy 2	water-resistant spray	0	0	1	0	0	1	0	0	0	0	0	0
copy 3 & 4	sleeved	0	0	0	0	1	0	1	1	2	1	0	0

Damage scale: 0 (no damage), 1 (minor damage), 2 (moderate damage), 3 (significant damage)

Table 8. Betrayal at House on the Hill Tokens

	Type of Preservation	Water			Soda			Cheese Dip			Salsa		
		30s	1m	5m	30s	1m	5m	30s	1m	5m	30s	1m	5m
copy 1	no preservation	1	2	3	0	2	3	0	0	0	1	1	1
copy 2	PVA on edged	0	1	1	1	1	3	0	0	0	1	1	1
copy 3	water-resistant spray	0	0	2	0	1	3	0	0	0	1	1	2
copy 4	contact paper	1	3	3	0	1	2	0	0	0	0	0	0

Damage scale: 0 (no damage), 1 (minor damage), 2 (moderate damage), 3 (significant damage)

and cheese dip. The copies of both games with sleeved cards had minor damage for cards left in the liquid for one minute and cheese dip for thirty seconds and one minute if the open end of the sleeve was in the liquid. The cheese dip caused moderate damage if left for five minutes. Both the salsa and cheese dip caused staining of the cards if they were not removed, wiped with a damp cloth, and put back into the sleeve when dry. Wiping the outside of the sleeved card was not sufficient for items with the sleeve edge in any liquid. To be sufficiently cleaned, the cards need to be removed from the sleeve. The TR cards that were sealed into their sleeves suffered no damage (see table 7).

The items most affected by the additional testing were the tokens and tiles made of chipboard in BHH. Chipboard is paper pulp pressed and glued together. The tokens with no processing left in water for five minutes had the layers of the chipboard separate completely. The polyvinyl acetate (PVA) on the edges helped mitigate the damage a bit, but not fully. The PVA dissolved in the water in the longer tests, losing its effectiveness. Water resistant spray held up a little longer to the liquids, but tokens still suffered with time. The tokens with contact paper were not fully wrapped, and also suffered significant damage when left in water or soda. Despite the considerable damage to the tokens, there were enough of these items for the game to remain usable (see table 8).

BHH's larger tiles are made of chipboard. These pieces also suffered damage when placed in a liquid, with the severity of the damage increasing greatly with time. The edges on the larger tiles from copy 1, 2, and 3 split, with the top layer curling up over the card when placed in cola and water after five minutes. The top printed design layer was easily rubbed off from the saturated tile. These pieces suffered the most irreparable damage during the stress test. The only process that mitigated this damage was copy 4's contact paper. The significant damage to the character tiles would require the purchase of a new game (see table 9).

Despite the damage to the tiles, none of the preservation processes to mitigate damage for this chipboard justify the staff time it would take to apply them. Even though the water-resistant spray did mitigate some damage and does not take long to apply, there are other problems related to its toxicity when being applied. Not many libraries have a vent hood or the time to take games into a ventilated area (outside in many cases) to spray the pieces and let them dry. The contact paper on the tiles and character cards saved them from damage, but again, the time and skill needed to apply this to prevent potential damage is too costly.

Game Box Lid

One of the places damaged during the regular circulation time period was the box lid corners. Three separate processes were used to reinforce these corners to prevent damage. Game boxes are made of cardboard. The thickness of this cardboard can vary with each game title. BHH's box is 1.84 mm thick and TR's box lid is 1.5 mm thick.

The additional stress testing included a dual wall edge crush test of just the box lids. Each box lid was crush tested with approximately twenty-eight pounds per inch of pressure applied to a corner. Again, each copy had a different type of preservation treatment applied to the corners. The copy with no treatment on the corners suffered moderate damage from this test. The corner tore down the corner

Table 9. Betrayal at House on the Hill Tiles

	Type of Preservation	Water			Soda			Cheese Dip			Salsa		
		30s	1m	5m	30s	1m	5m	30s	1m	5m	30s	1m	5m
copy 1	no preservation	2	2	3	2	3	3	0	0	0	0	0	0
copy 2	PVA on edged	2	3	3	2	2	3	0	0	0	0	0	0
copy 3	water-resistant spray	1	1	3	3	1	3	0	0	0	0	0	0
copy 4	contact paper	0	0	0	0	0	0	0	0	0	0	0	0

Damage scale: 0 (no damage), 1 (minor damage), 2 (moderate damage), 3 (significant damage)

seam and the cardboard bent from the corner outward along the lid's edges.

Copy 2 had the corners reinforced with clear book tape. The damage was moderate. The box seams did not tear, but the box bent and tore at the edge of the tape along the sides. The lid was still usable and stable.

Copy 3 had cloth tape applied to the outside corners. After testing, this box corner was easily popped back into place with minor damage. The box lid had a small 0.125-inch tear next to the cloth tape along the bottom edge, the box cardboard was bent, and the top printed layer of the cardboard was cracked but not torn.

Copy 4 had cloth tape on the interior and exterior lid corners. After testing, this box also popped back into place. The lid had a tear down the middle of each side adjacent to the tested corner. The box showed crush damage, but the damage was moderate.

All of the boxes were still usable with minimal to moderate repair needed after crush testing. Adequate repairs can be done with book cloth and PVA or with acid-free book tape.

TR Game Board

The board preservation methods were tested with a tablespoon of each liquid (cola, water, cheese dip, salsa) added to the TR board for five minutes, then carefully wiped off with a damp cotton cloth. Copy 1 and 3 sustained the most damage from this test. Copy 1 had no processing, while copy 3 had the board edges sealed with PVA glue. Immediately after testing, each board had a stain where a drop of liquid had sat on the board.

Copy 2 was preserved with water resistant spray on the board. After testing, this board had a small stain from the cola. Copy 4 was covered with contact paper. None of the liquids caused any damage to this board.

After drying, the staining from water or cheese dip on the boards is not visible. Copies 1 and 3 both showed slight stains from the liquids. The test area for both of these copies is easily identified through touch, with each spot raised and bumpy to touch where the liquid sat. Copy 1 had a scuff mark in the design layer where the cheese dip was wiped off. Both copy 1 and copy 3 had minor damage from this test. Both copy 2 (water resistant spray) and copy 4 (contact paper) did not show stains or damage from this test. All of the boards are still usable.

Instruction Booklets/Guides

The instruction booklets were stress tested by being hurled against a wall. The TR guide is a single-folded sheet. The guide for copy 1 of TR had no processing. After stress testing, this guide had a bent corner with very minor damage. Copy 2 of the TR guide was in a polyester L-sleeve. This guide was protected by the cover when stress tested. The sleeve has a few dents but damage is very minor. The copy 3 TR guide was sewn into an end sheet. Damage was very minor with a slight bend in the cover end sheet. Copy 4 TR guide was sewn into a pamphlet binder. The binder corner was bent but there was no damage at all to the guide inside.

Each BHH guide was also stress tested. This guide is about fifty sheets folded and stapled along the fold. Copy 1's guide had the staples removed and the fold sewn. The guide survived the stress test with a few minor dents in the paper. Copy 2 was sewn into end sheets. This copy was not damaged by the stress testing. Copy 3 was Velo bound. There was no damage to the cover or guide after stress testing. Copy 4 was sewn into a pamphlet binder. The spine was wrinkled and bent, but the guide inside showed no damage. The Velo and pamphlet binding protected the guide completely with no dents or wrinkles related to storage or stress testing.

Best Practices for Preservation and Processing

What types of preservation, processing, and circulation procedures are needed to keep a game viable, yet do not consume much staff time? UNT Library's goal is for high-use games to have at least a three-year lifetime before wear and tear make them unusable and they need to be replaced. Circulating these games for eight months and stress testing

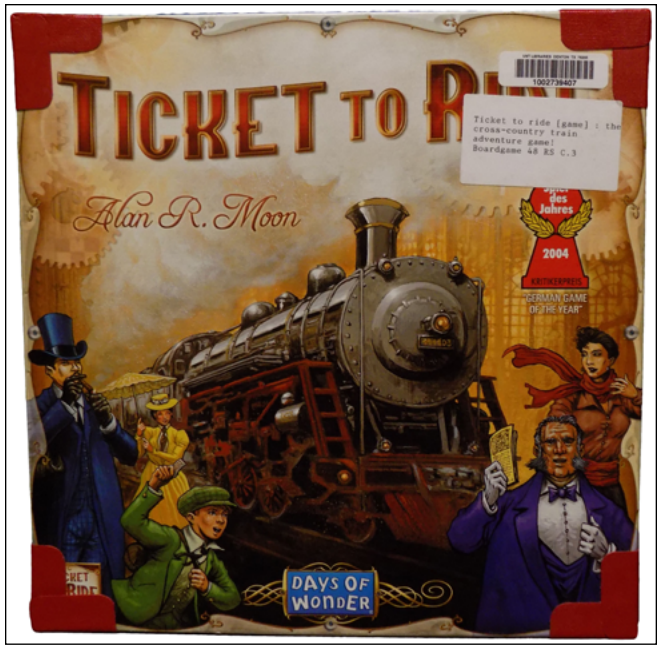

Figure 3. Cloth Corners

them was beneficial to gain insight into what best practices the authors should set for their collection.

Preservation decisions for the UNT Library tabletop game collection were informed by our research project. Despite the time and expense required for card sleeves, the authors found that cards quickly absorb liquids, oils, and other contaminants. Investing in sleeves can extend a game's life. Scratches or staining on a card may lead to success for unscrupulous players who memorize this damage for an easy win. The authors decided to sleeve their collection, especially high-use games that are not easily available for replacement. About 90 percent of our collection is sleeved, with the exception of about fifty party games such as *Apples to Apples* and *Cards Against Humanity*.

The authors decided to mitigate damage to the game box. Most of the box damage was minor, but smashed and torn box lids make it harder to shelve and circulate games. The authors' library is in a good position to minimize box damage by adding cloth corners to the outside of the boxes to add stability (see figure 3). The UNT Library does in-house binding and can use leftover pieces of cloth tape to corner game boxes. This greatly minimizes the cost of this preservation process.

Game pieces are also bagged. Many newer games come with bags, so the costs for this processing is minimal. The authors' library believes this is the one way to minimize loss without greatly increasing staff time.

Because the loss rate between minimal and full processing was insignificant, with less than 1 percent loss for both games, the authors decided that minimal processing was sufficient for our collection. Each of the games is cataloged and a single barcode is added to the lid of the box. This single barcode and item record are used for circulation. Games are labeled with the call numbers on the lids and sides for easier stacks management.

Conclusion

The type of damage that a library is willing to accept for any collection varies. Nevertheless, the authors hope that this exploratory research into the durability of tabletop games helps libraries more easily develop their procedures. The conclusion is that tabletop games, much like any other type of item, can be circulated to the public without expanding preservation and processing procedures far beyond the norm. The damage and loss rates between an item with no processing and full preservation and processing is not high enough to warrant the cost required. Tabletop game collections require more time to manage but not enough time to forego collecting these items.

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