

# Look and see: Optical technology and disciplinary mechanisms in Topps Trading Cards, 1948-1952

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## Abstract

In this article I examine trading cards produced by Topps Chewing Gum, Inc. in the United States in the decade following World War II. I focus on how these cards functioned as mechanisms of discipline, through the practices associated with collecting, as well as through their content and use. Cards reflected contemporary trends in education and behavioural science. In addition, they utilised what I term optical technology to entice children to buy. This came in the form of rudimentary optical tricks that emulated scientific and technological developments associated with wartime. I argue that in doing so, these cards brought children into the nascent military-technological complex, and provided a way to view the world in hierarchical terms through optical science.

**Keywords:** Trading cards, children, science, technology, anthropology, Cold War.

Published by



Original Research

Themed section on Visual rhetoric and rhetorics of the visual

# Introduction

In this article, I examine collectible trading cards produced for children between 1948 and 1952, which utilised optical technologies that allowed the cards to stand out in a crowded market. I explore how the optical and visual elements of the cards coalesced with collecting practices to inculcate a particular view of the place of the United States within global history. I differentiate between optical and visual using “optical” to denote devices that manipulate light to alter vision, such as light filtration, and “visual” to refer to the faculty of seeing, which may be altered by optical technologies.<sup>1</sup> I use the term “optical technology” to describe light manipulation devices that were included with some cards. I examine 1948’s *Magic Photos*, 1949’s *X-Ray Round Up*, and 1952’s *Look ‘n See* cards, all produced by Topps Chewing Gum, Inc., the leading manufacturer of trading cards by the mid-1950s. Trading card companies produced numerous non-sports cards during the postwar period, with many being explicitly educational, or portraying an idealised vision of the United States to their most common collectors: young boys. Analysis of the cards provides insight into how Topps envisaged its audience in the postwar period, and into what the company, its executives, and its artists deemed appropriate for children to know and understand about the world.

I first discuss how trading cards can be read as disciplinary mechanisms, proposing that they functioned to instil certain modes of thinking about the world; instructing about and perpetuating social hierarchies. I touch on Steven M. Gelber’s analysis of stamp collecting as a free market metaphor, and draw on Bruno Latour’s analysis of visualisation and cognition, suggesting that trading cards fit his concept of the “immutable mobile”. Having established trading cards as disciplinary mechanisms, I address the optical technologies invoked by these card sets: instant photographic development, and x-ray. Although the cards employ only rudimentary “technologies,” they use language that rhetorically links the practices of playing with cards to wider technological developments with which children were generally familiar. Their content lauds science and engineering as part of a militarised American identity, highlighting the pursuits of scientists and engineers alongside those of national heroes and pioneers. By engaging with these cards, young children of the postwar period were invited to learn about these heroic figures through a sensorial engagement with the kinds of technology they had pioneered. Moreover, children were learning about anthropological and cultural “others” by revealing information about them through visual play.

## Trading cards as disciplinary mechanisms

Trading cards were first sold together with cigarettes in the mid-nineteenth century with the aim that consumers would collect them, resulting in brand loyalty. However, politicians, and public health and morality groups raised concerns over their popularity with children (Jamieson 2010:17-24). This, and the relatively high production costs of cards to cigarettes, led to a decline in trading card production. The invention of bubblegum in 1928 provided a product that could be sold directly to children, allowing a new market for trading cards, which had already proven popular among children. By the postwar period, although they were still sold with bubblegum, the cards themselves had become the main draw for purchasers.

The cards themselves have a technical aspect: the impetus to complete sets means keeping track of numbers, duplicates, purchases, and trades. Noted collector Jefferson Burdick's 1947 donation<sup>2</sup> of his cards to the Metropolitan Museum of Art in New York City gave trading cards cachet as a form of American art, and he created a catalogue system by which card sets could be classified. His system is still widely used in the tracking and appraising of card collections.<sup>3</sup> Classification and institutionalisation are critical to an understanding of trading cards and their circulation as disciplinary. Trading card collecting can be likened to stamp collecting; both tend to be popular with boys or men,<sup>4</sup> and both prioritise the systematisation of information over sentimental attachments to imagery. In his analysis, Gelber (1992:756) notes that stamp collecting was initially linked to women and children, but around 1860 became more associated with men. He argues that the shift was related to the commoditisation and scientification of the hobby, whereby the aesthetic qualities of stamps and the sentimental value placed on their imagery were superseded by their financial and educational value. According to Gelber (1992:756), stamp collectors claimed to 'scientifically collect, classify, and arrange stamps', and that '[u]nderlying the physical aspects of the stamp itself was the taxonomic structure of the entire hobby. Like biological specimens, stamps could be analyzed and placed into specific categories. Once the stamp was authenticated and analyzed, it could then take its place as part of a defined set' (Gelber 1992:757).<sup>5</sup>

Trading card producers capitalised on the idea of classification and order by numbering cards in such a way as to promote collection. As early as the 1930s, collectors such as Burdick produced card collecting pamphlets that systematised sets. Although these booklets were more likely to be read by adult collectors than children, the ease with which card sets could be systematised highlights that these cards were conducive to systematic, completist, and hierarchical practices of collecting, even among children. Children may have remained unaware of the meticulous cataloguing systems, but text on cards, packaging, and additions such as checklists exhorted them to collect full sets.

As well as encouraging the purchase of more cards, wrappers and advertisements told buyers to trade with friends to complete collections. Therefore, trading card producers encouraged collaboration and systematisation, both in terms of card collecting practices, and of the information contained within cards. In this way, like stamps, trading cards constituted a hobby that ‘function[s] as part of a cultural matrix ... provid[ing] participants with experiences that help them make sense of their place in society’ (Gelber 1992:745).

In addition to the taxonomic and economic facets of trading cards, they are, at the most basic level, inscriptions. The cards contain images and information about a wide variety of topics, presenting overviews of contemporary western knowledge. They constitute part of a visual culture that ‘[re]defines both what it is to see and what there is to see’ (Latour 1986:10). Moreover, they fall into the category that Latour, in *Visualization and cognition*, calls ‘immutable mobiles’. Latour (1986:31) proposes, following print culture historian Elizabeth Eisenstein, that the impact of the development of printing on science and technology has been underestimated. He argues that printing’s real importance is that it can produce texts that are both immutable and mobile. In order to persuade others to think differently about aspects of the world, it is necessary to produce inscriptions of those aspects that are identical wherever they are viewed, in other words immutable, and yet also able to be dispersed or combined, making them mobile. Latour (1986:31) notes that paperwork — the act of committing inscriptions of objects to paper — is critical ‘to accumulate enough allies in one place to modify the belief and behavior of all the others’. He notes that printed things are easily circulated (while remaining immutable), are easily reproducible, can be ‘shuffled and recombined,’ and allow the superimposition of ‘totally different origins and scales’ (Latour 1986:21). This means that subjects that might not otherwise go together can do so when in printed form. Latour (1986:11) writes that immutable mobiles allow someone in a single location to collect ‘places far away in space and time and present them synoptically ... this synoptic presentation ... can be spread with no modification to other places and made available at other times’.

In contrast with oral circulation, statements imbued with the immutability of print become expensive and unwieldy to challenge. To contradict the printed word, one must print one’s own. The fact that trading cards in this period focused so heavily on the so-called “great white male” of western civilisation must have been counter to many American children’s experiences, particularly girls and children of colour. However, since the cards were inscribed and circulated by corporations, challenges to the hegemonic outlook were precluded. Latour (1986:16) notes the panopticism that is present in immutable mobiles, citing anthropologist Johannes Fabian in remarking that ‘the main difference between us and the savages ... is not in the culture, in the mind, or in the brain, but in the way we visualize *them*. An asymmetry is created because we create a space and a time in which we place the other cultures, but they do not do the same’ (Latour 1986:16,

emphasis in original). “Our” culture mobilises ‘all savages in a few lands through collection’, presenting them in a synoptic fashion to viewers. In doing so, readers can know the subjects, but in such a way — two-dimensionally, rather than three — that makes them ‘less confusing’ (Latour 1986:16).

Trading cards operate by presenting synoptic overviews of anthropological, historical, and scientific subjects in a way that renders them safe and easy to digest, and that produces illusory knowledge — superficial and beset by colonial overtones. In this sense, the cards resemble displays at World’s Fairs and exhibitions. As Lieven De Caeter (1993:5) notes, panoramas at events like World’s Fairs allowed all of history to be compacted into a single overview. Panoramas reflect the Enlightenment “fabrication” of ‘a linear time, a history as progress ... They make clear that to read history as progress you need a “viewpoint” and a “guideline,” a perspective where humanity is projected into a remote distance ... This organization of the perception of space and time could be called: “the panoramic gaze”’ (De Caeter 1993:4-5).

Trading cards that aimed to educate children about world history, and the American citizen’s place within it took this approach. They provide a panoramic overview of western civilisation, featuring paragons of western science and rational thought, while also giving an overview of what Fabian would have termed the “savage,” as counterpoints. Many card sets include such topics as tribespeople of the world or American Indians, often using highly detailed, if stylised, images of anthropological subjects. The numbering of the cards invites readers to place the content of the cards within a taxonomic, hierarchical structure, while the practice of collecting itself encourages readers to systematise their knowledge and understanding. Through a combination of visual flair and taxonomic organisation, these cards invited children to engage with history in ways that were educational, exciting, and disciplinary. They led children to an archive of western history through which they could view the world, and impose order upon it, thereby imposing order upon themselves. Moreover, the cards present their subjects in such a way that requires participating in optical techniques that reveal the “truth” about these subjects, engaging children with contemporary scientific developments, and heightening the anthropological aspect of such cards.

## The Technological States of America

After the trauma of World War II, the United States was renegotiating its position. Although it had “won,” asserting itself as a superpower, it had done so using fearsome technology that had the potential to annihilate nations in one stroke. During its tenure as the sole nuclear power, and even more so after losing this status, there was a drive in the United

States toward technological supremacy. Technological prowess had been a major contributing factor to the United States' triumph, and the transposition of military technology to domestic use was a pervasive theme, with many household technologies based upon scientific developments that had flourished in wartime.<sup>6</sup> Because technology was so integrated with rebuilding the peacetime economy, the domestic embrace of technological advances was tied to consumerism as an expression of citizenship.<sup>7</sup>

Therefore, it was critical that the public understood science and technology, and in this milieu, scientists and technological pioneers were lauded. Children were bombarded with messages about the importance of understanding science, particularly in the context of citizenship, democracy, and peace. In 1949, King Features Syndicate<sup>8</sup> published a pamphlet, *Dagwood Splits the Atom*, sold both as a standalone and with A.C. Gilbert's toy atomic science kits. In the pamphlet, heroes of popular cartoon strips learn about atoms. Despite its picture book format, it takes science education seriously. The director of the Manhattan Project and the Atomic Energy Commission, Lieutenant General Leslie Groves, wrote in the foreword that he hoped the pamphlet would 'touch off the spark that will send many on a quest for more knowledge and will help us to guide our leaders in creating an endless peace for all the world' (Groves, Dunning & Hill 1949:2).

Trading card companies were not strictly in the business of education, but their cards often had educational content. Though children may not have collected full sets or only had a partial grasp of any overarching narrative, the aforementioned inducements to collect meant that they would be aware of the full set's existence, and that they could ascertain the full synopsis of a topic by purchasing or swapping cards. In addition, trading card companies aimed to boost sales of cards by including rudimentary optical technologies, which emulated recent developments in science. This kind of technology was also present in contemporary novelty items that were sold through children's magazines, while do-it-yourself science was prevalent in this kind of children's culture as well.<sup>9</sup> I focus on two types of optical technology included in trading cards, which reflected developments in optical science: Topps' *Magic Photos* from 1948 emulated Polaroid instant photography, while 1949's *X-Ray Round Up*, and 1952's *Look 'n See* both referenced x-ray technology, using colour filtration.

In an article on the plausibility of Superman's x-ray vision, John B Pittenger (1983:653) notes we need not assume that the term "x-ray" be taken literally, and that any number of early- to mid-century optical developments may act as a stand-in. Thus, trading cards that invoke optical technologies need not require the literal implementation of those technologies, but merely entail a mimicry thereof. In fact, mimicry is useful in teaching young people about science. As radiology technologist Kevin L Wininger (2013:530) argues, 'science educators may use the notion of x-ray vision as a novel means to

introduce basic health physics'. Therefore, we can see the integration of such technologies, even in a mimicking form, into playthings as a method of basic science education, which allowed children to be enfolded within the wider discourses of these technologies.

### Topps *Magic Photos* (R714-27): 1948

Although Topps's iconic 1952 baseball set is widely regarded as the company's first foray into the baseball card market, that honour belongs to 1948's *Magic Photos*, which included a subset on the topic.<sup>10</sup> These cards were tiny, measuring 7/8" x 1 7/16", comprising two runs of 126 cards each. According to an article in *International Confectioner* (1949:sp), the set covered a range of 'such popular kid subjects as movie stars, baseball, football, basketball and Wild West heroes, military leaders and famous American inventors'.<sup>11</sup> Topps also advertised a collectors' album where children could store their cards. The cards featured 'a "magic" photo card which contains a quiz on one side and a blank reverse side which youngsters "develop" to reveal answers to the quiz' (*International Confectioner* 1949:sp). In addition to its wide range of subjects, the set invoked recent achievements in optical science to entice children to buy. The cards emulated the first instant camera, launched by Polaroid in 1948, meaning that children were participating in a version of this booming consumerist trend. Moreover, the scientific developments to which the cards alluded had been devised to aid the war effort. Therefore, in a single product, the set allows us to see a link between children's playthings, consumerism, science, and the military.

Just like the new instant Polaroid photographs, purchasers could "develop" their images within a few seconds. According to the *International Confectioner* (1949:sp), '[t]he blank side is developed when the youngster wets it and presses it against the chemically treated wrapper'. Although instructions directed buyers to dip the wrapper in water, collector reminiscences suggest that spitting on the cards was effective.<sup>12</sup> Moistening and rubbing the cards activated a proprietary chemical development process (See Figure 1). However, the cards did not always develop evenly (see Figure 2).

Indeed, as baseball card historian Dave Jamieson (2010:93) observes, *Magic Photos* 'flopped with children because the magic rarely materialized'. A leading seller of sports cards, Dean Hanley, backs this up, noting that the

patented 'magic chemical'... proved to be less than magical. It frequently failed to work and when it did, it produced images with a light, faded appearance. ... Topps' first attempt to break into the gum card market was a complete failure (Hanley 2012:41).



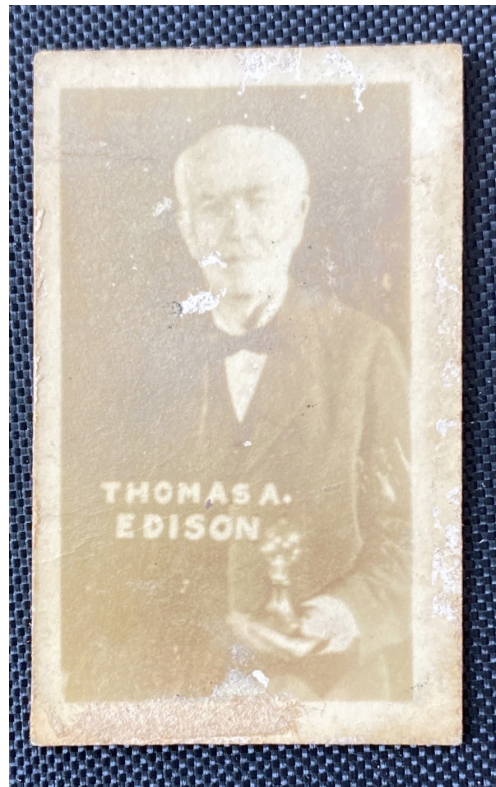


FIGURE **Nº 1a**



Topps *Magic Photos*, 1948, Thomas Edison (Author's private collection).

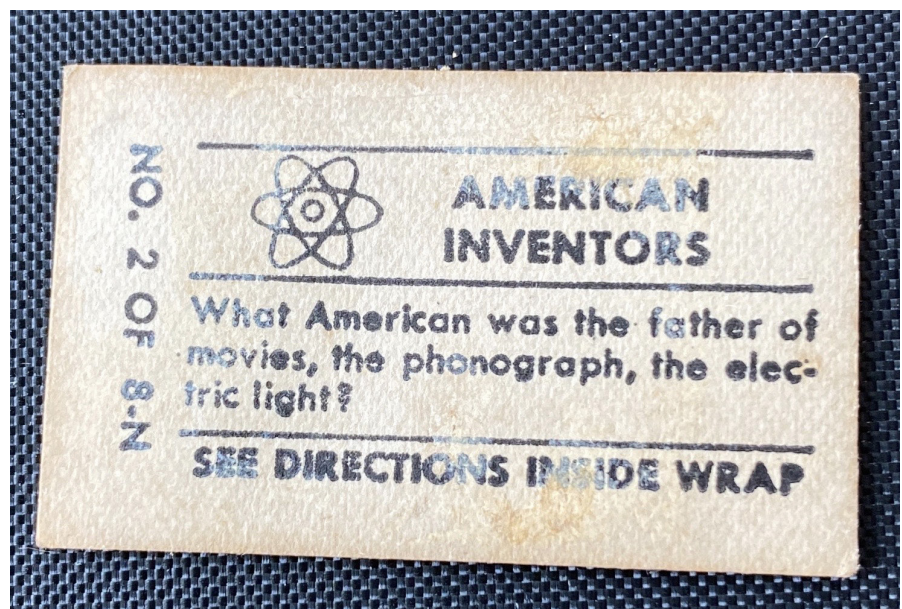


FIGURE **Nº 1b**



Topps *Magic Photos*, 1948, Thomas Edison (Author's private collection).



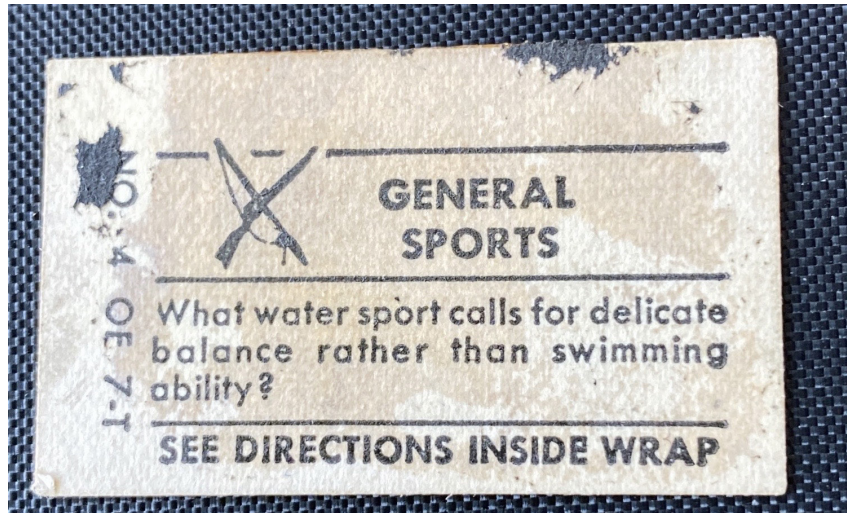


FIGURE **Nº 2a**



Topps *Magic Photos*, 1948, Waterskiing (Author's private collection).



FIGURE **Nº 2b**



Topps *Magic Photos*, 1948, Waterskiing (Author's private collection).

Regardless of their success, *Magic Photos* are worth examining as an example of Topps' strategy of introducing a rudimentary version of a contemporary scientific development into the world of children's playthings. In addition to inviting children to emulate adult consumer behaviour, play with these cards brought children into the military-technological complex, even in cases where the content of the cards was not explicitly military-themed. The fact that Topps and other trading card companies had

many ties to the military exacerbated this link,<sup>13</sup> so by playing with trading cards, children became technological subjects, learning how to operate within a system of American technological and military might.

Following his daughter's dismay at being unable to view holiday snaps as soon as they were photographed, Edwin Land set out to solve this problem, and by November 1948, the first instant camera, the Polaroid Land Model 95 was available to the public and sold in huge numbers. Although the camera stemmed from a child's interest in photographic processes, the technology used to produce it was refined under the military necessity of World War II. As patent lawyer, Donald L Brown (1960:448) explained, after contributing to the war effort, 'Polaroid Corporation found itself with a greatly expanded research and engineering division, with very little, if any civilian commercial business and with a considerably expanded plant'. It was Polaroid's activity on behalf of the military that allowed the company to develop technologies to the extent whereby they became commercially viable in civilian life.

By emulating technologies like this, trading cards entail clear links to consumer trends of the period as well as to developments that were critical to the establishment of American military and technological supremacy. Just as Peter Buse (2016) argues that 'it is not the chemistry but the consequences' that made Polaroid so important; in the case of *Magic Photos*, the rudimentary nature of the optical technology they employed is not the point. What matters is that the cards brought children into a sensorial engagement with a new technology. While bringing children into consumer markets through purchase, it also brought them into the consumerism associated with technological advances, and the military background of those advances.

Polaroid had also developed 'anti-glare goggles for soldiers and pilots, as well as gun sights, viewfinders, cameras, and numerous other optical devices with polarizing lenses. The Vectograph ... became a tool for the U.S. military to visualise geographic features of battlegrounds and aerial maps in three dimensions' (American Chemical Society 2015). These technologies were vital to the American war effort, with the Vectograph playing a key role in the discovery of the Nazis' V-Rocket program,<sup>14</sup> and became part of civilian life in peacetime. Polarised lenses became widely available commercially, and instant photographs constituted a major change in how people practiced home photography, with sales of the first Land camera, the model 95, reaching 900,000 units by 1953 (Bonanos 2012). Polaroid's developments, including the Vectograph, were critical in other areas as well, such as ophthalmological testing and technical illustration (Bernier 2009:86). Today, we can see the impact of the Vectograph in three-dimensional cinematography, where stereoscopic imaging and light filtration technology combine to produce 3D-movies. However, similar technologies are also found in mid-century trading cards, often referred to as "X-Ray."

## *X-Ray Round Up* (R714-25) and *Look 'n See* (R714-16)

While the means to carry out penetrative imaging had been available since the discovery of radiation by Roentgen in 1895, x-ray technology was enjoying a boom in the immediate postwar period, with the 1940s seeing the introduction of 'mass civilian screening for tuberculosis with portable x-ray machines' (Gitlin 2011); the introduction of mobile radiology equipment, and the invention of superior imaging techniques to fulfil military needs (Krohmer 1989:1136); the new field of "health physics" that grew from an increased awareness around exposure to radiation that stemmed directly from the Manhattan Project (Brodsky & Kathren 1989:1271); and the use of radiography in shoe fittings for children (Gitlin 2011). Therefore, the rhetoric of x-ray technology would have been familiar to children of that era, who would also have been exposed to phenomena such as Superman's x-ray vision, which first appeared during the 1940s. In addition, novelty products like X-Ray Specs abounded in popular culture.<sup>15</sup> These products used basic optical technology, dressed up as x-ray, to create a visual illusion that enticed children to see the product as technologically novel, and to purchase it in droves.

*X-Ray Round Up* was a 200-card set released in 1949 that carried full-colour illustrations of people representing five topic subsets: "Indians," "Movie Stars," "Pirates," "Savage Tribesmen," and "Wild West," including such figures as Sitting Bull, Mae West, Captain Kidd, a Lumbwa Warrior, and Billy the Kid (see Figure 3). On the backs of these cards were red line drawings related to the topics, with a faintly visible green drawing, also related to the topic,<sup>16</sup> underlaid (see Figure 4).

When a piece of red cellophane was held over the cards, the green image became more visible. Although this technique has nothing to do with actual x-ray, the naming of these cards invokes the x-ray technology that was a popular facet of science culture at that time. It is unclear how popular these cards were,<sup>17</sup> but the highly collectible 135-card set *Look 'n See*, released in 1952, used the same optical technology. Although this set did not use the term "x-ray", the fact that the same red-cellophane technique had been referred to as "x-ray" by the same manufacturer only three years earlier, suggests that both sets of cards evoke the popularisation of x-ray technology in wider culture.

*Look 'n See* appeared as Topps was attempting to wrest dominance of the trading card market from rival producers, and closely mirrored Topps's renowned 1952 baseball set, which featured a new design and was 'the most popular sports card set ever produced' (Hanley 2012:65).<sup>18</sup> The cards measured 2-1/7" x 2-7/8",<sup>19</sup> and featured full-colour portraits of individual people, with their names in a white box surrounded by yellow (see Figure 5). Whereas the baseball cards carried player autographs in this box, *Look 'n See* provided descriptions of the person's defining achievement, while baseball team logos were replaced by icons depicting the field with which each individual was associated.





FIGURE N<sup>o</sup> 3

Topps X-Ray Round Up, uncut sheet, pictured at New York Historical Society Print Room, (New York Historical Society PR031, Scrapbook 65, included in the scrapbook among Look 'n See cards, February 2020).



FIGURE **Nº 4a**



Topps *X-Ray Round Up*, card 23, King of the Crow Tribe, back (Author's private collection).



FIGURE **Nº 4b**



Topps *X-Ray Round Up*, card 23, King of the Crow Tribe, back with "magic" cellophane, revealing an image of a water hole, (Author's private collection).





FIGURE **N° 4c**



Topps *X-Ray Round Up*, card 23, King of the Crow Tribe, front (Author's private collection).

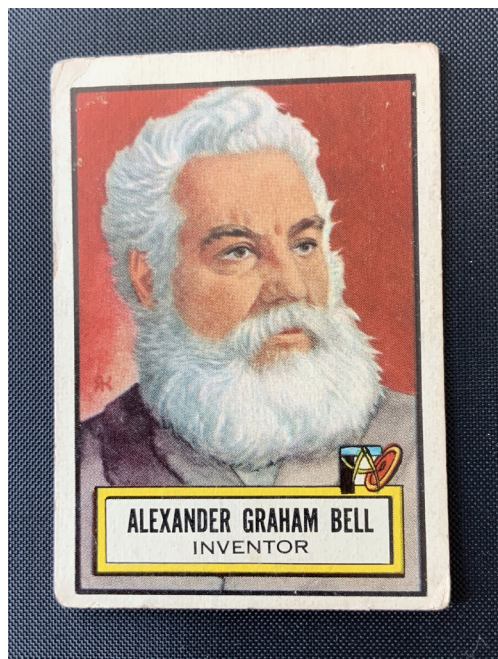


FIGURE **N° 5a**



Topps *Look 'n See*, card 74, Alexander Graham Bell, front (Author's private collection).



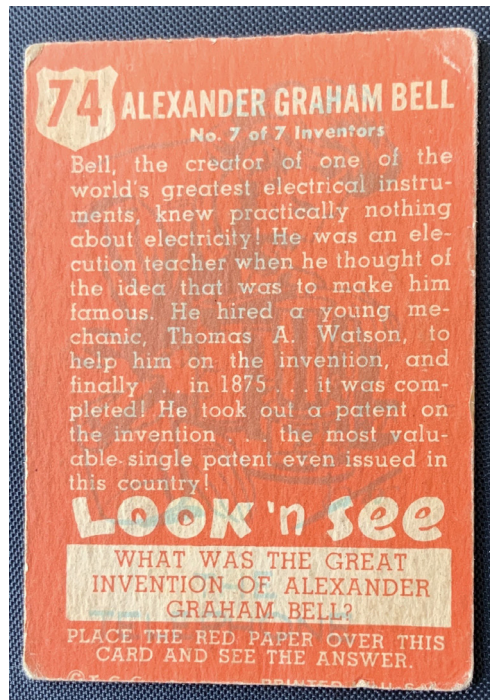


FIGURE **Nº 5b**



Topps *Look 'n See*, card 74, Alexander Graham Bell, back (Author's private collection).



FIGURE **Nº 5c**



Topps *Look 'n See*, card 74, Alexander Graham Bell, back with "magic" cellophane revealing the answer to the question on the card (Author's private collection).

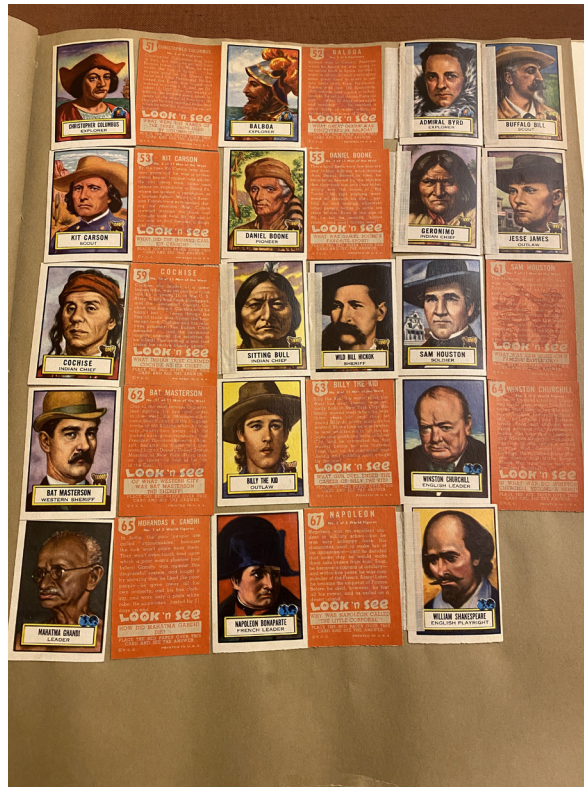


FIGURE N° 6



Topps *Look 'n See*, cards 51-68, pictured at New York Historical Society Print Room. (New York Historical Society PR031, Scrapbook 65, February 2020).

Like synoptic courses on western civilisation, which were in vogue in the period as part of a wider trend toward general education, *Look 'n See* featured a wide range of individuals from world history (see Figures 6 & 7).

Many of the figures (21) on the cards are associated with politics or statecraft, with several United States presidents featured, alongside a selection of world leaders from across history. These are supplemented by a variety of culturally significant individuals such as writers, artists, composers, and athletes. In addition, 19 are defined by military endeavours, 18 are scientists or inventors, and 16 are shown as pioneers or explorers, associated with foundational knowledge about the United States or the world. A further six are categorised as “patriot”,<sup>20</sup> and are broadly associated with the birth of modern America. However, just as overview courses of the period tended to omit women from the narrative,<sup>21</sup> so *Look 'n See* features only 11 women across 135 cards.<sup>22</sup> Finally, only nine cards show people of colour, with only a small selection of these written about in a laudatory manner, like George Washington Carver, who is noted for his contributions to agricultural science. Meanwhile, although Mohandas Gandhi is written about in heroic terms for standing up to oppression in India, the card misspells his name as “Ghandi”.<sup>23</sup> Problematically, some





FIGURE N° 6

Topps *Look 'n See*, selection of cards with “magic” red cellophane, pictured at New York Historical Society Print Room. (New York Historical Society PR031, Scrapbook 65, February 2020).

of the more heroically described men of colour are coded in the artwork as white. For instance, the Mongol leader Genghis Khan appears identical in skin tone to many of the western subjects, with a pale eye colour. Both he and Chiang Kai-Shek sport classical Roman noses. The remainder of the subjects of colour are “Indian Chiefs,” who are largely depicted ignominiously, such as Geronimo who is described as ‘the worst Indian who ever lived! Cunning and blood-thirsty, he was very cruel’.<sup>24</sup>

## X-Ray and revelation

While the fronts of the *Look ‘n See* cards present a synoptic overview of history, the backs require that children engage with optical technology to reveal further information. The so-called “x-ray” effect added an element of anthropological surveillance; not only were children seeing images and information about icons of global history or “savage tribespeople,” they were also encouraged to probe them. Using cellophane, they could reveal hidden information through deeper observation, and discover the “secrets” of their subjects. In the early Cold War state, the rhetoric of surveillance was abundant, with myriad toys that encouraged spying, or manipulating the visual to obtain information.<sup>25</sup>

This emphasis on deeper observation was also prevalent in contemporary social sciences. In *Hypothetical machines*, Rebecca Lemov (2010:409) writes that, ‘[i]n addition to emphasis placed on systematizing, formalizing, and recombining methods, the late 1940s and 1950s saw great technophilic fervour for what could be called the “x-ray” approach to seeing more penetratingly ... what it meant to be human’. Social sciences boomed, resulting in an abundance of new techniques to quantify and classify populations and individuals. The social sciences nodded to medical observation technologies that allowed the analysis of heretofore unknown or misunderstood information, and social scientists saw their psychological examinations as providing ‘what amounts to an X-Ray picture’ of the inner selves of anthropological subjects (Lemov 2010:409). Lemov (2011:254) further notes that ‘X-ray like tools, in the course of their deployment in fieldwork, would be able to regularize the observation of all that otherwise eluded ordinary visibility’. Likewise, trading cards regularised the gaze of children toward both American icons and “exotic” populations, imposing order onto them, augmented by replicas of scientific observation.

## Conclusion

In 1953, Topps’s advertising and sales director, Mitch Diamond, wrote to collector Bella C. Landauer that, ‘if you place the cellophane [sic] on top of the red portion of the card, you will find the answer appearing like “magic”’ (Diamond 1953). Although some might

write off the “magic” of the cellophane as a sales gimmick, the use of revelatory technology in these cards was more akin to what David Kaiser and Patrick McCray (2017) call ‘the science and technology that had underpinned the expansion, power, and prosperity of the United States since’. In the postwar period, as atomic and space science abounded, children were increasingly exposed to science-adjacent entities - both in school, with formal education covering such topics as atomic energy and international relations (Hartman 2008:137), as well as in their day-to-day playthings.

Children also experienced scientification in everyday life, reflecting the culmination of a period in which the role of “scientific experts” held increasing sway over child rearing. As Judith Sealander (2002:2-3) notes in *The failed century of the child*, developments over the first half of the twentieth century included ideas like sorting children into educational grades, with age-appropriate targets. Play was also subject to such regulation, with self-directed play superseded by rules-based team sports,<sup>26</sup> and commercial toys divided into age- and gender-appropriate strata. Many playthings for children also highlighted militaristic and scientific supremacy as an American ideal.<sup>27</sup> These had the potential to regulate children, both in the act of play itself, and in terms of their emergent subjectivity.

Many of the Topps sets from the postwar period reflect a tendency to valorise general education, prevalent in this period, which only waned after the Soviet Union’s Sputnik launches.<sup>28</sup> In 1946, the Harvard-produced *Redbook* (cited in Stevens, 2001:184) called ‘for education in a common heritage and toward a common citizenship’. This was exemplified by university-level courses in western civilisation.<sup>29</sup> As William H McNeill (1997:520), a history professor at University of Chicago from 1947 to 1987, wrote, this kind of curriculum was:

a liberating message for many Americans ... it conveyed membership in the great cultivated, reasonable, sophisticated world of ‘us,’ the heirs of a Western tradition dating from Socrates and surviving all the tribulations of the Medieval and Early Modern eras. World War II and the Cold War only intensified ... the agenda of a unified West led by America fighting for freedom and reason and tolerance.

Similar to these university courses, trading cards provide a necessarily superficial overview of the United States as the apex of centuries of western civilisation, juxtaposing it with so-called “savages” – anthropological “others,” who in many cases were displaced, uprooted, or usurped by that very civilisation. Indeed, as Latour (1986:16), citing Fabian, recognises, there exists a ‘mobilization of all savages in a few lands through collection, mapping, list making, archives ... [so that] everything about the savage life is transformed into immutable mobiles that are easily readable’. These cards not only gave children a particular view of the United States, but also encouraged disciplinary modes

of seeing. The Foucauldian panopticon, as Latour (1986:15) writes, ‘is another way of obtaining the “optical consistency” necessary for power on a large scale’. Trading cards required children to examine subjects in ways that emulated the optical consistency produced by contemporary military-scientific innovation.

The already hierarchic vision of the world put forth by the content of these cards was augmented by the inclusion of optical technology that tied the cards to both other popular cultural artefacts and the scientific worldview of the period, and induced a mode of interaction that required children to perform similar work to the social scientists of the Projective Test Movement. As Lemov (2011:251) explains, the Projective Test Movement aimed to use social and behavioural sciences as ‘x-ray machines to see into ... subjects tested around the world’. As well as frequent allusions in their content to the scientific achievements of the United States, trading cards added layers of anthropological information along with the kinds of optical techniques that were being applied to behavioural studies of other cultures, notably in areas of interest to American expansion, like the South Pacific islands where nuclear testing continued apace. These cards allowed children to play anthropologists, viewing “exotic” cultures from afar and revealing the innermost secrets of the subjects of the cards through optical science.

Although, of course, the cards were less scientifically rigorous than the true behavioural sciences, they too purported to allow insight into the kinds of people that populate the world, and to give children an understanding whereby they could classify those people based on hierarchies of what is deemed important to the American subject. This was done by invoking military-scientific developments and implementing technologies that allowed children to look inside their subject, and to perceive what might otherwise be hidden.

## Notes

1. The Oxford English Dictionary notes that “optical” relates ‘to light, ... [or to] an instrument or apparatus: constructed to assist vision’ (OED, website, optical entry), while “visual” relates to ‘the power or faculty ... of sight’ (OED, website, visual entry).
2. Burdick offered his collection to the Museum in 1947; they tasked him with cataloguing the cards himself, a task that he worked on until his death in 1963.
3. To streamline the hobby in the early 1930s, Burdick developed the system for classifying cards by manufacturer, illustration type, and date of issue (Belson 2012:sp).
4. Although girls collected, anecdotal evidence suggests that boys were more avid. The rhetorical content of cards seems to presume a young, white, male audience. For more see Bloom (1997) and Kevill-Davies (2018).
5. This certainly seems to apply to collectors today, whose use of the Burdick system, appraisal sites, and online forums is geared toward completing sets of cards based on various agreed-upon criteria.



6. Such as Superglue, developed by Eastman Kodak during WWII and opened to consumer markets in 1958, and synthetic rubber, developed during the war and later used for a range of purposes such as tires and even replaced natural (chicle) chewing gum.
7. Much has been written about the integration of wartime technology into the domestic arena following World War II. For more see Whitfield (1991), Colomina, Brennan and Kim (2004) and Cohen (2003).
8. A subsidiary of Hearst Consolidated Publications, now Hearst Communications
9. For instance, beginning in the 1950s, General Electric published comic books about scientific developments, while in 1946 Ace Comics produced *Science Comics* that mingled comic strip depictions of scientific discoveries and processes, written articles on science, and instructions for home science with everyday objects, while magazines like *Boys' Life* contained similar content, albeit presented in a style more in keeping with the Boy Scouts of America's ethos.
10. The set was reissued in 1956, this time with the cards named *Hocus Focus*.
11. The subsets were: Boxing Champions "A" (24); All American Basketball "B" (6); All American Football "C" (13); Wrestling Champions "D" (25); Track and Field Champions "E" (17); Stars of Stage and Screen "F" (22); American Dogs "G" (17); General Sports "H" (2); Movie Stars "J" (45); Baseball Hall of Fame "K" (19); Aviation Pioneers "L" (9); Famous Landmarks "M" (9); American Inventors "N" (8); American Military Leaders "O" (10); American Explorers "P" (2); Basketball Thrills "Q" (5); Football Thrills "R" (5); Figures of the Wild West "S" (7); and General Sports "T" (7) (<https://www.psacard.com/cardfacts/multi-sport/1948-topps-magic-photos/1026>).
12. These reminiscences can be found on collector forums, including <http://www.net54baseball.com/showthread.php?t=91812>, <https://www.number5typecollection.com/2008/07/1948-topps-magic-photos-5-lou-boudreau.html>, <https://forum.vintagenonsports.com/post/topps-magic-photos-set-r71427-1948-252-card-images-9593037>
13. As Joy Santlofer (2017:199) notes, throughout World War II Topps 'used the slogan 'Don't Talk Chum, Chew Topps Gum,' an allusion to the silence urged in war-related factories to increase worker productivity ... and a reminder not to leak secrets'. Topps was also contracted to provide chewing gum for military food ration kits through the Korean War. Topps and other companies produced sets of military-themed cards, often with imagery provided by the U.S. Military, with patriotic colouring and wording on wrappers.
14. The British National Collection of Aerial Photography holds intelligence images of sites that were critical to undermining the V-rocket program as part of Operation Crossbow: <https://ncap.org.uk/feature/operation-crossbow>
15. X-Ray Specs have existed since the 1900s, and are discussed at <https://www.orau.org/ptp/collection/atomic toys/xrayspecs.htm>. Myriad other toys involving optical technology existed contemporaneously, such as a ring that allowed one to visualize atomic reactions, sold as a means to reveal secrets, chemistry and science kits, and so on.
16. For instance, the red image on the card for California Joe, a Western Scout, showed a western style saloon building, and revealed a green image of wagons with the caption 'Sighting the Stockade'. The card for Captain Francis Spriggs depicts a pirate with a treasure chest in red, and in green shows a pirate holding pieces of gold.
17. They were reissued in 1956, which suggests they were popular, but there is no concrete data.
18. For more of the history of Topps' struggles to achieve dominance, see Jamieson (2010), Hanley (2012) and Hornish (2013).
19. According to card authentication site PSACard. Other sites have different dimensions listed: <https://www.psacard.com/cardfacts/non-sports-cards/1952-topps-look-n-see/28128>

20. Several of the lauded military figures are associated with the Confederate States of America, while only one is labelled as “traitor,” Benedict Arnold.
21. The omission of women, other than heads of state or martyrs, was a feature of overview courses that was remarked upon by Weber (1999) and McNeill (1997).
22. Presidents’ wives: Dolly Madison (135), Eleanor Roosevelt (43); heads of state: Anne of Cleves (102), Queen Elizabeth II (104), Cleopatra (44); women of science/medicine: Clara Barton (83), Marie Curie (87), Florence Nightingale (111); along with Amelia Earhart (45), Annie Oakley (46), and Joan of Arc (133).
23. This may be merely a typographical error, as it is written correctly on the reverse of the card. However, it suggests a lack of care in spelling non-western names correctly.
24. The full list of subjects of colour is as follows: Geronimo (56), Sitting Bull (58), Cochise (59), Mahatma Gandhi (65), Chiang Kai-Shek (85), Tecumseh (96), and Genghis Khan (128).
25. For instance, the Kix Atomic Bomb Ring was advertised with a comic strip in which a young boy spied on would-be infiltrators to a laboratory and state secrets, while Superman’s x-ray vision was well established.
26. For more on the scientification of play, see Sutton-Smith (2009) and Chudacoff (2007). For more on the regimentation of sport see Elias (2001) and Montez De Oca (2013).
27. Toy guns, atom bomb themed toys, science kits, and so on were abundant in this period.
28. See Hartman (2008) and Clowse (1981).
29. Debates raged for decades at major universities over the value of providing an overview education, as opposed to more narrowly focused specialist subjects. Particularly after World War I, proponents of the general education movement advocated for the teaching of an overview of global history from an American perspective. See Pinar *et al.* (1995)

## References

- American Chemical Society. 2015. *Edwin Land and Polaroid photography: A National Historical Chemical Landmark*. [O]. Available: <https://www.acs.org/content/acs/en/education/whatischemistry/landmarks/land-instant-photography.html>  
Accessed 7 May 2020.
- Belson, KA. 2012. Hobby to many, card collecting was life’s work for one man. *The New York Times*, 22 May. [O]. Available: <https://www.nytimes.com/2012/05/22/sports/baseball/baseball-card-collecting-was-lifes-work-for-jefferson-burdick.html>  
Accessed 7 May 2020.
- Bernier, B. 2009. Polaroid Vectographs. *Topics in Photographic Preservation* 13:86-99.
- Bloom, J. 1997. *House Of cards: Baseball card collecting and popular culture*. Minneapolis: University of Minnesota Press.
- Bonanos, C. 2012. *Instant: The story of Polaroid*. New York: Princeton Architectural Press.

- Brodsky, A & Kathren, RL. 1989. Historical development of radiation safety practices in radiology. *RadioGraphics* 9:1267-1275.
- Brown, DL. 1960. Protection through patents: Address before the New Jersey Patent Law Association, in accepting on behalf of Dr. Edwin H. Land, the 1960 Jefferson Medal Award. *Journal of the Patent Office Society* 42:439-454.
- Buse, P. 2016. *The camera does the rest: How Polaroid changed photography*. Chicago: University of Chicago Press.
- Chudacoff, HP. 2007. *Children at play: An American history*. New York: New York University Press.
- Clowse, BB. 1981. *Brainpower for the Cold War: the Sputnik crisis and National Defence Education Act of 1958*. Westport: Greenwood Press.
- Cohen, L. 2003. *A consumers' republic: The politics of mass consumption in postwar America*. New York: Vintage Books.
- Colomina, B, Brennan, A & Kim, J. (eds). 2004. *Cold War hothouses: Inventing postwar culture, from Cockpit to Playboy*. New York: Princeton Architectural Press.
- Dan C (user comment). 2007. Topps Magic Photos set...R714-27...1948...252 card images. Vintage non-sports cards user forum. [O]. Available: [https://forum.vintagenonsports.com/post/show\\_single\\_post?pid=1302620814&postcount=8&forum=647140](https://forum.vintagenonsports.com/post/show_single_post?pid=1302620814&postcount=8&forum=647140) Accessed 2 December 2020.
- De Cauter, L. 1993. The panoramic ecstasy: On World Exhibitions and the disintegration of experience. *Theory, Culture & Society* 10:1-23.
- Diamond, M. 1953. Letter to Bella C. Landauer Re: Look N See Cards. [Letter] held at New York Historical Society, Patricia D. Klingenstein Library, Print Collections, Bella C. Landauer Ephemera Collection: PR031, Scrapbook #65.
- Elias, R. 2001. *Baseball and the American dream: Race, class, gender and the national pastime*. New York: Routledge.
- Gelber, SM. 1992. Free market metaphor: The historical dynamics of stamp collecting. *Comparative Studies in Society and History* 34:742-769.
- Gitlin, J. 2011. *The early years of x-rays and informatics: A founding member of SIIM reminisces about the industry of 50 years ago*. Interview with Joseph Gitlin. Imaging Technology News. [O]. Available: <https://www.itnonline.com/article/early-years-x-rays-and-informatics> Accessed 7 May 2020.

- Glidden, S. 2014. 1948-49 Topps Hocus Focus Magic Photos #5, Lou Boudreau. Number 5 type collection: Baseball's vintage century (1990-1980), one card set at a time. [O]. Available: <https://www.number5typecollection.com/2008/07/1948-topps-magic-photos-5-lou-boudreau.html>  
Accessed 2 December 2020.
- Groves, LR, Dunning, DJR & Heil, DLM. 1949. *Dagwood Splits the Atom*. King Features Syndicate, Inc.
- Hanley, D. 2012. *The bubble gum card war: The great Bowman and Topps sets from 1948 to 1955*. Lexington: Createspace.
- Hartman, A. 2008. *Education and the Cold War: The battle for the American school*. New York: Palgrave Macmillan.
- Hornish, D. 2013. *The modern hobby guide to Topps Chewing Gum: 1938 to 1956*. David Hornish.
- Jamieson, D. 2010. *Mint condition: How baseball cards became an American obsession*. New York: Atlantic Monthly Press.
- Kaiser, D & McCray, P. 2017. *Groovy science: knowledge, innovation, and American counterculture*. Chicago: University of Chicago Press.
- Kevill-Davies, H. 2018. Children crusading against communism: Mobilizing boys as citizen soldiers in the early Cold War state. *Rhetoric & Public Affairs* 21(2):235-278.
- Krohmer, JS. 1989. Radiography and Fluoroscopy, 1920 to the Present. *RadioGraphics* 9:1129-1153.
- Kuklick, H & Long, E. (eds). *Knowledge and Society: Studies in the Sociology of Culture Past and Present*. Greenwich: Jai Press.
- Latour, B. 1986. Visualization and cognition: Thinking with eyes and hands, in *Knowledge and society: Studies in the sociology of culture past and present*, edited by H Kuklick & E. Long. Greenwich, CT: Jai Press:1-40.
- Lemov, R. 2010. Hypothetical machines: The science fiction dreams of Cold War social science. *Isis* 101:401-411.
- Lemov, R. 2011. X-rays of inner worlds: The mid-twentieth century American Projective Test Movement. *Journal of the History of the Behavioral Sciences* 47:251-278.
- McNeill, WH. 1997. What we mean by the west. *Orbis* 41:513-524.

- Molho, A & Wood, GS. 1999. *Imagined histories: American historians interpret the past*. Princeton: Princeton University Press.
- Montez De Oca, J. 2013. *Discipline and indulgence: College football, media, and the American way of life during the Cold War*. New Brunswick & London: Rutgers University Press.
- National Collection of Aerial Photography. n.d. Operation Crossbow. [O]. Available: <https://ncap.org.uk/feature/operation-crossbow>  
Accessed 2 December 2020.
- Oak Ridge Associated Universities. 2009. X-Ray Specs (ca. 1990s). [O]. Available: <https://www.ornl.gov/ptp/collection/atomic-toys/x-rayspecs.htm>  
Accessed 2 December 2020.
- OED Online. 2020. "optical, adj. and n." Oxford University Press. [O]. Available: <https://www.oed.com/view/Entry/132057?redirectedFrom=optical>  
Accessed 2 December 2020.
- OED Online. 2020. "visual, adj. and n." Oxford University Press. [O]. Available: [www.oed.com/view/Entry/224004](http://www.oed.com/view/Entry/224004).  
Accessed 2 December 2020.
- Pinar, WF, Reynolds, WM, Slattery, P & Taubman, PM. 1995. Understanding curriculum as historical text: Crisis, transformation, crisis 1928-1969. *Counterpoints* 17:124-185.
- Pittenger, JB. 1983. On the plausibility of Superman's x-ray vision. *Perception* 12:635-639.
- Santlofer, J. 2017. *Food city: Four centuries of food-making in New York*. New York: WW Norton.
- Sealand, J. 2002. *The failed century of the child: Governing America's young in the twentieth century*. Cambridge: Cambridge University Press.
- Stevens, AH. 2001. The philosophy of general education and its contradictions: The influence of Hutchins. *The Journal of General Education* 50:165-191.
- Sutton-Smith, B. 2009. *The ambiguity of play*. Cambridge: Harvard University Press.
- Topps Introduces Hocus Focus Gum. 1949. *International Confectioner* February.
- Professional Sports Authenticator. Topps 1952 Look 'n See [O]. Available: <https://www.psacard.com/cardfacts/non-sports-cards/1952-topps-look-n-see/28128>  
Accessed 2 December 2020.

Professional Sports Authenticator. Topps 1948 "Magic Photos." [O]. Available:  
<https://www.psacard.com/cardfacts/multi-sport/1948-topps-magic-photos/1026>

Weber, E. 1999. Western civilization, in *Imagined histories: American historians interpret the past*, edited by Molho, A & Wood, GS. Princeton: Princeton University Press: 206-222.

Whitfield, SJ. 1991. *The culture of the Cold War*, Baltimore: Johns Hopkins University Press.

Wininger, KL. 2013. A look at Superman's x-ray vision *Radiologic Technology* 84:530-535.