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How Chess Became Hardcore

A Short Game Design History

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Abstract

In the past 1500 years or so, mainstream chess has known only one major redesign towards the end of the XVth century. Why this happened then and, more importantly, why the change was so quickly and universally adopted is still poorly understood. In this paper I approach the question through the lens of game design history. I begin by analyzing the repercussions of the rule change at the mechanical, dynamical and aesthetical levels (MDA) in an attempt to reconstitute its general rationale. I refute the hypothesis of a brilliant new design automatically relegating the older variant into oblivion. I extend the MDA framework with a new level of analysis, the “meta”, in order to consider historically changing socio-cultural factors. I finally propose that the advent of new chess is the result of a “hardcore capture” made possible by shifts in the game’s player communities

Keywords

Chess, Game Design, Game History, Hardcore gamer, MDA, Simulation, Play ethics

A Game Design History of chess

The object of a *game design* history of games is the changing form of games in time (their design) and the reasons for these changes. Its basic (and perhaps obvious) premise is that games do not change randomly, like the mutations driving biological evolution. A game is changed because it is found lacking in some way, and the nature of that change is tied to an intent. This is true even before changing or inventing games was called “game design” and considered as an autonomous practice.

The main purpose of such a history is to shed new light on existing game histories with the conceptual tools developed to understand the design of games and their appropriation by players. Reciprocally, game historiography can act as a res-

ervoir of exemplars helping designers understand how games evolve over very long periods of time within changing socio-cultural landscapes—escaping the narrow vision of personal experience and project iterative cycles.

Chess is a natural target of such an approach as it is often invoked as the ultimate game design reference: elegant, complex, timeless¹. There are certainly interesting lessons to be gleaned from this long history. It is also convenient that this is one of the better studied and documented traditional games, thanks to its privileged status among the elites.

This being said, the history of chess rules is surprisingly uneventful. Chess was essentially played the same way for a thousand years from the first historical traces we have in XVIth century Persia. Then, in the late XVIth, probably in Catalunya or possibly somewhere in Italy, a new variant was devised that met a widespread approval across the chess playing world. This variant, “Queen’s chess” or “Chess of the rabid Queen” as it was sometimes called, has become mainstream chess and is still the one played internationally. In other words, it hasn’t changed significantly for almost 500 years². Throughout this text we will refer to these two mainstream models simply as “old chess” and “new chess”.

This might come as a surprise to those who could have justly assumed that such an elegant design was the result of a long sequence of refinements and iterations³. It also is in stark contrast with the constant updating required by contemporary competitive games in order to maintain their delicate balance under the pressure of millions of players looking for exploitative strategies. At the time of writing, the website chess.com (which is only one venue for playing the game) still hosts an average of nearly 5 million games daily; and countless chess players have come and gone over the centuries leaving the game pretty much intact.

In a sense, new chess is arguably one of the most successful act of game design in history. And it was a very simple one too: no complicated apparatus, algorithm or narrative had to be devised. It was simply a matter of saying: now the queen

¹ In the index of Elias *et al.*'s *Characteristics of Games* (2012), the entry “chess” is by far the most populated one, with almost a reference every two page.

² Of course, chess isn’t a single game evolving over time but a family of similar games comprised of a great number of variants (some of which will be addressed in this text). However, here I am concerned with the dominant forms which can be easily identified as needing no explanation. If I say: “let’s play chess”, you know what I am talking about. Before 1600, we would still both have been in agreement, but thinking of a different ruleset.

³ It is, of course, possible that this is what happened prior to the appearance of chess “as is” in historical sources.

moves like this, and the bishops like this. But why *these* changes and not some others? And perhaps even more importantly: why *then* and *there*? Designing modern chess did not require any knowledge or technology that hadn't been available in the previous thousand years of chess playing. In spite of significant scholarship on the history of chess, these questions still haven't found definitive answers. We'll see if a game design perspective on the problem might contribute some leads. The question should also be of interest for game designers: how does a new variant suddenly appear and overtakes the space occupied by a game that had otherwise been stable for a thousand years?

My method to address these questions will be to perform a multi-layered comparison of the two games. Knowing precisely how the new rules changed chess should help us question the reasons for that change. There are multiple valid analytical tools for games but I have chosen to use the so-called MDA framework (Hunicke *et al.* 2004) because of its simplicity and widespread familiarity amongst both game scholars and designers (a rare feat!). The letters stand for "mechanics", "dynamics", and "aesthetics" which refer to three general orders of ludic phenomena: formal characteristics, live behaviors, and psychological reception. This will prove to be a bit insufficient and I'll be introducing a fourth layer to conclude my analysis: socio-cultural factors (the "meta").

New Mechanics

Analyzing design changes at the mechanical level means describing formal modifications to the game's rules and material instruments of play. The formal changes brought by modern chess are well known and can be easily described:

Pawns: Speeding up pawns had been one of the first innovations of European chess after its adoption from the Muslim world. In many regional rulesets ("assizes"), the pawns were allowed to move two squares on their first move until the first capture of the game. This was further confirmed in the modern chess rules with the first capture limitation being removed.

Bishops: In the old game, bishops (and their regional equivalents—this piece has the widest range of names across languages) moved to the second diagonal square in any of the four directions, jumping over any in-between pieces like the knight. In the new game, the bishop can reach any square diagonal to its position, but cannot jump over pieces.

Queen: In the old game, queens ("fers") could only move to one of the four

immediate diagonal squares from its position. The new queen can reach any diagonal or orthogonal square from its position, effectively cumulating the powers of new bishops and rooks.

For non-chess players, these changes can seem quite superficial. Indeed, most of the game remains exactly the same: the same 8x8 board, the same 16 pieces in the same starting position, the same turn by turn process, the same winning conditions⁴, the same name! Although we'll see in the next section that these changes significantly impact the game's dynamics, it would be difficult from the previous description alone to imagine the significance of this redesign on the game.

A new invention?

At this stage, a possible answer to the question "why did this change happen *then*" would be that no one before had either thought to (1) alter the pieces' moves in general, or (2) to alter them in this specific way. Completely new ideas are quite rare in the evolution of games which is mostly driven by the emergence of new combinations of existing elements⁵.

We can immediately disqualify the first proposition as there had been hundreds of documented chess variants circulating both in the Muslim and Christian worlds. Common areas of experimentations were larger board sizes, piece distributions (to fill in the new squares afforded by larger boards), but also different move rules. In other words, we cannot explain the new chess rule change by the sudden realization that one could alter the pieces' move rules.

Was it, then, that no one had previously thought of these *specific* moves? As already mentioned, the idea of speeding up pawns had been around for a while, but it is not the most crucial alteration. Interestingly, one can find direct predecessors of the new bishop moves. Cazaux and Knowlton note that the crocodile piece of "the grant acedrex" game described in the *Libro de los juegos* (written almost two centuries earlier) moved like the modern bishop. They also find another precedent in the eponymous piece of "courier chess", a German chess variant. As for the queen rules, there are no explicitly documented precedents but Mark Taylor's close reading of chess-inspired medieval texts strongly suggests that such move rules were at least *imagined* earlier (2012).

⁴ A small exception: new chess will abandon winning by baring the opponent king of any other pieces.

⁵ Modern designers often call these elements "mechanics" while more traditional game scholars have also used the term "ludeme", borrowing from structuralist linguistic concepts such as "morpheme" and "phoneme" (Browne *et al.* 2019).

It is well possible that the inventors of new chess were not aware of these precedents, but these minimally indicate that such moves had been “thinkable” for a while. Why weren’t they adopted earlier on if they introduce such desirable changes as attested by the quick success of new chess? Our next task is then to try to understand what these new rules *do* to the game so that we can speculate on the intentions behind them.

New Dynamics

Chess players will intuitively imagine the main differences brought by the rule changes without even playing. The old pawns, bishops and queen had very limited range in comparison to their modern counterparts which presumably resulted in much slower progression. Though this is easily confirmed by testing the old game oneself (and corroborated by chess historians) I wanted to substantiate further these impressions. In order to gather data on the different dynamics between the two games I had the same basic artificial intelligence (AI) play hundreds of games of the two types while tracking a few variables that I’ll describe shortly. The AI was based on simple algorithms that were not informed by documented tactics and strategies of the games. This means that the generated games are not necessarily similar to human-played games but that when compared, highlight dynamic differences between the two rulesets⁶.

Quicker openings

The length of openings in old chess had been a concern for European players ever since the adoption of the game from the Muslim world. It took many turns for pawns to meet any opponent piece on the board and open the way to the rooks, the most mobile pieces of the game. As mentioned earlier, this was addressed in many regions by enabling the initial two-square move. Other solutions were also adopted: kings were often allowed a one-square and sometimes even two-square jump on their first move (with some caveats). German assizes even allowed for the king and queen to move jointly on their first move. The most radical proposition is the “short assize” form in which the pawns began one row ahead with the knights and rooks behind them, leaving only the bishops and king behind. This further goes to show that medieval players were not shy to change rules to address what they considered to be irritants of the game. The modern rules further confirmed this

⁶ I am not describing further the method for lack of space, and also because the results largely corroborate existing scholarship.

trend and reinforced it with the increased mobility of bishops and queens which could get in contact with opponent pieces as soon as they had an opening.

Shorter games

Unsurprisingly, with more mobile pieces comes the opportunity to conclude the game sooner. The difference is quite substantial with the AI taking an average of 50 turns to conclude old chess games and only 36 for new chess. Perhaps even more remarkable is that there are occurrences of new chess games being over in as few as 4 turns⁷ while the shortest old chess one still required 12.

More complex games

An interesting characteristic that can be tracked with the AIs is how many discrete options are available to a player at every turn. It turns out that over a game of new chess, the AIs had to consider an average of 33 discrete possible moves per turn for only 25 in the old game. This means that the more mobile pieces require players to consider more options in general, each branching off into a very wide range of possible variants⁸.

Tenser games

The fact that new chess affords more options to players doesn't necessarily make the choice more difficult. As Elias *et al.* put it: "[...] from the point of view of human players, what matters is the number of *meaningful* choices" (2012—my italics). To gauge whether this is the case with new chess, I have tracked another metric which I have named "tension"—that is the proportion of available choices with high stakes, namely the possibility to be captured or to capture another piece. It turns out that not only does new chess bring about more options, but a significantly higher proportion of them are "in tension" (11.6% vs 16.2% for new chess).

⁷ Apparently the AIs didn't perform the fool's mate which takes only two turns.

⁸ Lida *et al.* (2003) argue that old chess is more complex than new chess. This is because they define a game's complexity as the average number of possible moves multiplied by the average number of game turns. Since old chess games tend to be much longer, the decision tree is indeed deeper overall. However, human players (and even AI) can only consider a limited number of future moves (presumably the same for old and new chess). Therefore, from a human perspective, complexity is principally driven by the number of choices available at the moment, except perhaps for very short games.

More “balanced” piece types

Game designers know that “balance” in a game is not an absolute value but rather a contextual heuristic entirely dependent on the experience expected from a game. Old chess and new chess are both perfectly balanced competitive games as they both afford the exact same starting conditions to each player (with the notable exception of the first move). However, modern game designers might notice that new chess increases the *internal* “balance” between the different piece types which I will describe shortly. I haven’t seen this discussed much in chess literature, perhaps because games with a variety of complementary pieces are much more common now than they were historically. It was one of the distinctive ludic propositions of chess to challenge players in coordinating a “team” of differently abled pieces.

A commonly desired balance in these types of games is that each “class” of unit contributes something distinct, enlarging the spectrum of viable strategies in interplay with the other units, with none evidently dominating the others (Fullerton *et al.* 2008). The typical example is that of the complementary three main forces of real-time strategy games: infantry, cavalry and archers. It could be said that old chess pieces were indeed complementary through the attribution of distinct and non-overlapping moves as illustrated in Figure 1.

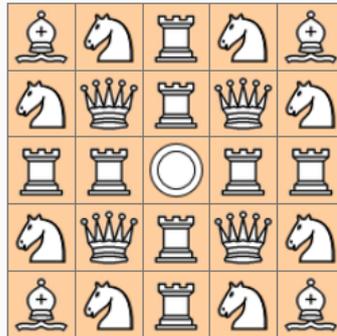


Figure 1: Complementarity of old chess piece moves (“Shantranj”, Wikipedia 2020)

In practice, however, this entails that some of the pieces turn out to be much more useful than others. The old bishops, for example, only have access to an exclusive total of 8 squares each on the board throughout the whole game without any possibility to capture or defend each other. To get a sense of this internal balance, Table 1 compares piece values between old chess and new chess according to

various methods of evaluation⁹. My own is calculated from the average number of squares accessible to each piece throughout AI-played games.

⁹ To make the evaluations comparable, I've followed Cazaux and Knowlton's (2017) approach to keep the same value for the rook and redistribute the others accordingly.

Piece (modern name)	Old chess			New chess	
	Arabic manuscripts ¹⁰	Cazaux <i>et al.</i>	Author	Standard	Author
Rook	5	5	5	5	5
Knight	3.33	2.9	2	3	3.2
Queen	1.67	1.67	1.4	9	8
Bishop	1.25	1.3	1.1	3	3.5
Pawn	0.63-1.25	0.7	.31	1	1.12

Table 1: Piece value comparison between old and new chess.

An immediate observation is that the power of pieces either increased or stayed the same. In modern parlance, the bishops and queens were significantly “buffed” with the consequence of elevating pawns as well since they can now “queen” to a much stronger piece when they reach the end of the board. This leads to the increased dynamism described earlier.

It might be argued that the extreme augmentation in power of the queen actually undermined the balance between the pieces. This is true when one looks at the pieces individually, but if one thinks of them as “classes” then the solo queen doesn’t stand out as much when compared to the pair of bishops or octet of pawns as shown in Table 2.

Piece	Old chess			New chess	
	Arabic manuscripts ¹¹	Cazaux <i>et al.</i>	Author	Standard	Author
Rooks (2)	10	10	10	10	10
Knights (2)	6,66	5,8	4	6	6,4
Queen (1)	1,67	1,67	1,4	9	8
Bishops (2)	2,5	2,6	2,2	6	7
Pawns (8)	7,5	5,6	2,48	8	8,96
Standard deviation	3,5	3,3	3,5	1,8	1,5

Table 2: Piece class value comparison between old and new chess

We can see that the standard deviation of modern piece strength as classes is

¹⁰ Values reported by Cazaux and Knowlton (2017).

¹¹ *Idem.*

smaller than half that of old chess. In other words, the piece types in new chess contribute more equally to the distribution of forces than in older chess, each playing a more significant role in the overall game.

Simply a better game?

An analysis of the dynamics of new chess tells us that the variant is more dynamic, more complex, more tense and more “balanced” in some respect. Could it be that the reason for the change is simply that the newer variant was objectively better, leaving no reason to continue playing the old one once it was revealed to the world? In fact, it could be generally argued that anytime a game’s design is changed, it is to make it better. Why change a game for the worse? And if a game stops changing, like it is almost the case for chess, then it must mean that it has evolved to its ultimate state.

The problem with this hypothesis is that the “betterness” of a game is far from evident. How can we know whether a game is better than the other? Chess is one of the most beautiful and enjoyable games in this world for some, while for others it’s a fastidious, aggravating nightmare. Some people like first-person shooters (fps) while others prefer match-3 games. And even amongst the fps and match-3 fans will you find dissension as to which specific game or series is the superior one. It is really a matter of what one is looking for in a game. In other words, the “betterness” of a game can only be assessed against some frame of expectations.

The fact that new chess was so quickly and universally adopted does signal some general consensus amongst contemporaries concerning its superiority over old chess. However, the question remains as to why it took so long to get there. The medieval experiments to speed up openings show that players actively addressed the problems they identified in the game. Therefore, we have to suppose that the problems fixed by new chess were *not* previously considered as problems—that the rule changes of new chess reflect (and were motivated by) a change of expectations towards chess.

I borrow this perspective from Petrovski’s *Evolution of Useful Things* (1993) and Bijker’s social construction of technology (SCOT) model (1995). Both show through various case studies that design histories do not inescapably converge to a perfected form, but are rather shaped by expectations (“social constructions”) that can change in time. The bicycle, for example, first evolved to be *less* safe in order to be faster and more acrobatic (the “penny-farthing”) to suit riders who saw the activity as an extreme sport of sorts. It was later redesigned for a larger public more interested in reaching a destination in one piece (Bijker). Petrovski’s provocation is that

form doesn't follow function (as per traditional design wisdom) but *failure*: things are changed when they are perceived to be failing in some capacity.

The question then, is in what ways did chess players of the late XVth century find chess to be failing in order to be receptive to the propositions of new chess? We have some leads from our description of dynamics but this is a very analytical point of view. Players mostly gauge games from their "experience" with them—what the MDA framework names "aesthetics".

New aesthetics

As a subjective experience, the aesthetic reception of a game is always difficult to describe precisely; and with some confidence that our observations are minimally generalizable. Yet the exercise is necessary as ultimately this is the *raison d'être* of games in their quality of otherwise useless activity.

A merciless, analytical game

As games of the same family (or genre), the experiences of playing old and new chess have a lot in common. They are intellectual duels of perfect information, testing the opponents' ability to assess the strengths of various positional configurations, to plan and foresee multiple possible courses of actions and to predict the other player's moves. Even non-chess players generally share the notion that the game represents something like a pure intellectual contest, not tainted with factors of chance, physical abilities or social status.

One of the key aesthetic differences brought about by new chess is to leave even less room for mistakes. As we've seen, a new chess game can be over in as little as two moves if one is not careful. The shorter range of old chess pieces meant that significant actions could take many moves to play out, setting up a pace of cumulative progression, while new chess offers strong potential for immediate and dramatic turns of event. The relative lower value of the pieces also meant that losing material did not have as dire consequences. In new chess, for example, losing a queen often means effectively losing the game altogether. The result of this is that new chess sets the player in a state of perpetual tension, inviting them to ponder carefully each individual move as any error—even at the very beginning of the game—can prove fatal.

When a modern player tries their hand at old chess, they are likely to miss that pressure—finding the game to be slow and tedious, with each move having much lower stakes. Ironically, these same qualities that aficionados appreciate in new

chess—the delicious state of tension and knowledge that any poor move can be brutally punished—are also the main factors driving potential players away from the game. For many, chess is just too daunting, analytical and stressful. Why would you voluntarily submit yourself to hours of deep calculations and speculations only to be ridiculed by this opponent whom you know has been studying openings and positions as if it was actually useful knowledge? Isn't life full enough of humiliating trials as it is?

With this provocation I want to re-emphasize that the superiority of new chess aesthetics is not self-evident, even for players today. We can only say that the variant is superior for those who value this aesthetic. Since chess players at the turn of the XVIth century decided to adopt new chess, then we have to believe that they did—or that enough of them did to convince the others to follow suit. However, since the game had not changed towards that direction for the previous thousand years, I would argue that it was not previously the case. Therefore, my hypothesis is that the game changed when it did because chess players and their relationship towards the game had changed.

What lies beyond aesthetics?

This is where the MDA frameworks becomes insufficient to pursue our analysis. Its higher-level order of phenomena, “aesthetics”, concerns the mental states of players as they are playing the game; but here we need to discuss the socio-cultural factors scaffolding that experience. This of course not a breakthrough observation. In their seminal textbook on game design Salen and Zimmerman already identified “culture” as one of their major framings alongside “rules” and “play” (2003); Elias *et al.* call this the “superstructure” of a game (2012).

In highly competitive games, an important external factor is the accumulated knowledge about a game's play. In all sports, some “ways of playing” become outdated for having been proven through experience as inferior to others. This is certainly the case with chess that probably has the longest tradition of “theory” that needs to be studied in order to be a competitive. Modern e-sport players call this “the meta”, a term which I have decided to use to describe this fourth layer of phenomena I am adding to the (now) MDAM framework. As its Greek root means “beyond”, I think it fittingly encompasses all the socio-cultural factors that might influence the experience of a game beyond its immediate actualization.

A new “Meta”

Symbolic re-associations

According to the theory of Indian origins, the Sanskrit name for chess *chaturanga* (literally “four parts”) designated the four main corps of the ancient Indian army: infantry, cavalry, chariots and elephants. Chess thus “simulated” in a sense the encounter of two opposing armies led by their kings and advised by their counselors. This metaphor remained very legible when Persians adopted the game and circulated it in the Muslim world, even if chariots were already obsolete as war instruments at that time.

When the game reached the Christian world, some of these associations were lost in translation, so to say. The Arabic names for the pieces were not all intelligible to Christian players, especially since many of them were direct transliterations from Persian or Sanskrit. Moreover, as the Arabic pieces were abstracted following the Muslim tradition of avoiding human representation, their identity was not immediately recognizable. The king, pawns and knights were generally well understood, but the counselor, chariots and elephants were given meaningless approximative names based on their Arabic designations that varied from region to region.

Although the general idea of a battle between two camps remained clear for medieval Christian players, the ambiguity of representation led them to reimagine some of the game’s symbolism. Medievalist Mehl (1990) notes that Europeans generally understood the parties as kings surrounded by their court rather than battle camps on the field. Naturally, the piece next to the king was often interpreted as the queen. The elephant saw the most wide-ranging interpretations that are still observable in modern languages with French naming the piece *fou* (fool), for example, while English speakers chose to see it as bishop—both roles having little to do with actual warfare.

This new symbolism begs some new questions concerning the major promotion of the queen in new chess. Could it reflect change in mentality concerning the status of women in politics? Some historians have proposed that the new queen may have been inspired by the example of strong contemporary stateswomen such as Isabella of Castille during whose reign new chess likely emerged (Yalom 2005, O’Shea 2010). It is difficult to substantiate claims of direct inspiration but it is safe to say that such examples might have made a powerful chess queen more *thinkable* than in previous historical contexts. Van der Stope (2014), however, objects to this line of thinking that the symbolism of chess was more of a concern to poets and

philosophers and not so much for avid players who, according to him, long continued to use the meaningless word “fers” instead of “reine” (queen).

New ethics of play?

In medieval Europe, chess was mostly played by the nobility. It was one of the occupations associated with a good upbringing alongside weapon training, horseback riding, tennis, etc. It was important for noble youth to be proficient at these games, but just as important to not take them too seriously. Game playing was a social lubricant for nobility and thus was emmeshed in whole ethical complex of courtesy and self-discipline—especially in relationship to women (Mehl 1990). In chivalric literature, chess is omnipresent as means (and allegory) of seduction between men and women and in that respect is not the contemporary battlefield of wits in which a player will do anything to subdue their opponent. Even on the actual battlefield knightly ideology favored the chivalric display of bravery over crass strategical thinking (Duby 1985).

These observations don’t mean that chess games weren’t ever taken seriously. Ideology is one thing, actual behavior is another. However, this means that the medieval ethics of play (for nobles at least) were not favorable to the deep commitment valued in today’s chess masters. It would not have been deemed chivalrous to spend days studying and practicing simply for a win on the 64 squares. This is reflected by the quasi absence of literature on chess strategy and tactics—something that flourished hundreds of years earlier in the Muslim courts. In fact, it is often considered that the level of European medieval play was generally quite poor. In modern jargon, we could say that the prevalent ethics of play promoted a *casual* stance towards the game—valuing the social encounter over competition.

If new chess—a deadlier, more analytical game—appeared and was widely adopted when it did, then perhaps it is because this “casual” stance towards chess had changed by then. This could either be explained by a change in chess players themselves, and/or in the relative positioning of chess within the ecosystem of contemporary games.

New chess players?

Sadly, though unsurprisingly, we do not dispose of reliable data concerning chess player demographics at the turn of the XVth century. Examining available documents of the time, chess historians do not find evidence of a noticeable change. Murray writes:

There is nothing in the chess records of the third quarter of the fifteenth century to suggest that the position of the game in popular favor was in any way different from what it had been at any time during the preceding century, or that chess-players were contemplating any changes in the method of play (p.776).

Yet, Cazaux and Knowlton hint at new chess being a product of a changing *zeitgeist*:

The medieval game was assuredly too slow to start, not quick and dynamic enough for Renaissance minds. In a time of great upheaval in the arts and sciences, chess in turn became due for a momentous revision (p.244).

Who are these “renaissance minds” longing for a more analytical game? As we’ve seen, chess was strongly associated with nobility, however there is no evidence of a shift of perspective towards chess in that social category. In his *Book of the courtier*, a lifestyle manual for nobles published soon after the adoption of new chess, Castiglione explains that the energy needed to play the game well would be better employed in the study of useful things and concludes that “[...] as far as chess is concerned, we reach what is a very rare conclusion: that mediocrity is more to be praised than excellence” (cited in Eale p. 78).

Historian Richard Eales offers a potential lead with his observation that after its progressive adoption by the European nobility between the XIth and XIIIth century, chess had then begun to “spread to those who had enough leisure, means and education to imitate aspects of the noble life style” (p. 58). Perhaps it is in the emerging city elites, bourgeoisie and humanist intelligentsia of the Renaissance that we are to find chess players with the mental disposition to take a game “seriously”.

If we look at the profiles of the handful of authors associated with the earliest documents texts referring to new chess, we find only one minor noble (de Castellví) alongside a pharmacist (Damiano), a diplomat (Lucena), a cleric professor of mathematics (Fenollar), a lawyer (Viñoles), another mathematician (Pacioli) and yet another mathematician (Cardano). Of course, we can’t assume that these authors are in any way representative of contemporary chess players in general but it is interesting to find scientists and practitioners of the liberal arts instead of usual medieval poets and moralists. Pacioli and Cardano are famous intellectuals of their times, the first having been a collaborator of Leonardo da Vinci and the second associated with the founding of probability mathematics. The nature of the treatises also changes: we now find full game records as well as studies of openings, something that was unheard of since the classical Muslim masters.

The fact that high-flying intellectuals might be interested in the intricacies of

new chess can hardly explain its quick and widespread adoption by all kinds of chess players. It's not that making the switch was particularly difficult, one could grasp the new rules within a few minutes. The question is rather: why change? When a game is universally established, it takes a very significant momentum to change players' habits.

Le jeu des échés de la dame, moralisé is one of the earliest available texts evidencing the new rules of chess. It follows the medieval tradition of "chess moralities" — that is using the game as an allegory for some aspect of society. Even though the author is using the reformed rules, he complains that they "gave such great privilege to [queens] and [bishops] that the rooks, who are very wise and prudent captains, and the discrete knights have become useless" (cited in Murray 2012, my translation). Apparently, this author was not the target audience for the new game. Why did he choose to use the new rules then? Where did this pressure come from?

A "Hardcore Capture"

I find a parallel process in the recent widespread adoption of Texas Hold'em poker. This variant has become so popular in recent years that if you suggest to someone a game of poker, this is the kind they will likely have in mind. It could be argued that like new chess, Texas Hold'em is a hardcore variant, as it greatly increases the strategic depth of the traditional five hidden card game. This doesn't mean that Sunday poker players are now all engaging in deep analytical play. Perhaps many of them would actually be more comfortable with a less complex variant such as classical draw poker. However, Texas Hold'em's heavy exposure through televised high-level competition and various popular culture venues at the turn of the 21st century has undeniably made it the *cool* poker—not your dad's poker. Interestingly, it took the variant close to a hundred years after its invention to achieve this status. This further discredits the idea that if a game variant is just "better" it will naturally spread and be adopted. Apparently, a set of favorable conditions are needed for this to happen.

My refined hypothesis is that at the turn of the XVth century, one could find pockets of avid ("hardcore") chess players in multiple European urban centers (mainly Spain, Italy, Portugal and France, probably). When the new chess variant was designed (probably in Valencia), it circulated and was quickly adopted amongst these groups that could immediately grasp how the new rules enhanced the kinds of aesthetics *they* were drawn to. These groups—in their authority of experts in the matter—then would have acted as something like "leaders of opinion" or "influencers", to use modern terms, towards general chess players. New

chess, became the new “cool” chess, even if you were still playing it casually. This would explain why a casual player like the author of the *Jeu des échés de la dame, moralisé* felt obligated to follow the new rules even if he did not get the point of them. A factor of importance that probably helped this process that did not exist previously is the availability of the printing press and consequently the wider distribution of chess-related texts (Eales 1985; Cazaux and Knowlton 2017).

In other words, chess underwent at the turn of the XVIth century what I would call a “hardcore capture”, a trend that will be progressively intensified until its peak during the Cold War. We can define “hardcore capture” as the historical process by which highly-dedicated players become the dominant stakeholders of a game and consequently push its evolution towards design changes that reward that kind of involvement and its aesthetics. The result is that the barrier of entry to these games becomes increasingly difficult in time, thus reinforcing the selection bias of new players in favor of like-minded “hardcore” types as opposed to more dilettante ones. It is to be understood as the opposite process of the “casual revolution” Juul (2012) observed for video games in general in the early 2000s; and Lessard for adventure games specifically in the 1980s (2013).

Other games have known similar trajectories. Parlett (1990), for example, describes the evolution of Whist which emerges as a widespread, popular, even “low class” card game and is progressively appropriated by an elite pushing for “scientific” play. He evokes the pressure of a “fashionable game” imposing itself even on players who are not attracted by its play aesthetics; a phenomenon we observed with the quick adoption of new chess even by novices or casual players:

As often happens with classic games, the recognition of Whist as a social accomplishment meant that many people who would really have been more at ease with something else felt morally obliged to subordinate their taste to that of the prevailing fashion (p.220).

This “hardcore capture” (Parlett doesn’t use this term) begins with the increasing pressure for new players to master (and often learn by heart) a number of conventions and tactics to “play well” —something particularly important in this game played in pairs: you don’t want to let your partner down. Symptomatically, numerous manuals were published targeting various demographics. The game design consequences of this desire for highly competitive play will be the progressive weeding out of chance and the emphasis on skill and calculations. Heretofore common variants instantly rewarding the distribution of a set of strong cards will progressively abandoned. The more decisive moment, however, will be the swift replacement of Whist by Bridge as dominant trick-taking game. The latter can be considered an offshoot of the older game with the further removal of chance by the

integration from other games of bidding and contract setting mechanics. This transition is not unlike the one between old chess and new chess.

Conclusion

The main argument of this paper is that if medieval chess players had been longing for a more dynamic and analytical game, such a game would have emerged earlier. These players were not shy to modify rules to “fix” what they considered shortcomings of game, such as the dragging openings. Therefore, the emergence of new chess is less a question of invention, but rather one of timing, social context, and player demographics. Its widespread adoption can then be interpreted as the symptom that the most influent figures of the chess world at the turn of the XVIth century were ready to play chess *seriously*, and that they could impose that ethic to the other players.

As a final note, I wouldn't want to discard the ingenuity of the design act that created new chess—as a game designer myself, I like to think this work is not trivial. Whoever devised those new rules certainly had a keen sense of the game and its aesthetics, bravo to them! But we also must be humble in the face of crowdsourcing: millions of players over thousands of years would have “fixed” chess this way or otherwise if they had considered it to be less than perfect.

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