

Minesweeper – More Than Just A Computer Game

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I. Introduction

You probably call a personal computer your own and use the internet regularly. Or at least you have access to one and to the internet. And almost every person you know does so too. If your PC runs with 'Linux' you can stop reading right here, because you most likely have hardly even ever heard about what comes now. If it does not run with Linux, you are using a version of Microsoft Windows, whatever version it might be. And this means that the chances you have a game called 'Minesweeper' on your PC are overwhelmingly high. In normal Windows the game can be found by a click on the 'Start' button, then => programs, => games, where it is listed together with games called Solitaire, FreeCell or Pinball.

The rules of the game are easy to learn, so that even a pre-schooler can understand them. There is a certain number of Mines spread over a grid of X*Y squares and to win the game you need to determine and click on all squares that do not contain a mine. If you hit a mine you lose the game. But despite how many people there are in the world who claim that Minesweeper is based on nothing but luck, they all have certainly never had the patience to read the game's help file and to learn and understand how Minesweeper is to be played. In CollegeHumor's¹ 'Minesweeper - The Movie'² the logic of the game is explained as:

"Each time you dig (When you release the left mouse button over a square – when you do a click), you find a number. That number will tell you exactly how many mines are adjacent to your square (e.g. a 2 means that exactly 2 of the 8 squares that surround your square are mines and that the other 6 squares are safe to click on)." - So when you have a square with a 1 and only 1 of the surrounding squares is left covered and you have not yet marked one of the other 7 squares as a mine it is clear that this last square has to be a mine.

Example patterns:



This 2 means that 2 mines are hidden in the 8 adjacent (green) squares



The "1" with a green background touches only 1 more uncovered square and it is known that all its 7 other squares do not contain the mine. Conclusion: The mine must be under the last (already flagged) other green square. The "1" in yellow right to it also touches this now known mine. This means that all of the 7 other squares

¹ Collegehumor.com – an American comedy website

² ["Minesweeper The Movie"](#) on YouTube

touching the yellow “1” must be safe – the other 3 yellow squares are safe to uncover. The “2” in light blue on the left touches only 2 more squares, which means that the 2 still closed cells next to it (also in light blue) are mines.

Although this game can be a nice distraction from the boredom of having to wait for e.g. a download, the truth is that some parts of the math that can be found in Minesweeper are so difficult that no computer will ever be able to find and prove a solution to them³ – the number of different boards on beginner mode is more than a billion times higher than the number of dollars spent in U.S. stimulus packages⁴.

The video of the former world record in Minesweeper has already been viewed more than 3 million times, ‘Minesweeper – The Movie’ has even more⁵. Some people spend several hundred hours on playing Minesweeper, desperately trying to beat their high scores.

So it should not be a big surprise to you that professionalism has already reached Minesweeper, like it has already often happened in many other more or less well-known video games. At this moment there are more than 900 known pro-sweepers⁶. 1 in about 3000 Facebook users calls themselves a fan of the game⁷. Projecting this ratio on the number of Windows users, Minesweeper might be one of the best-known computer games in history. In contrast to this the number of people who have serious knowledge about pro-sweeping is certainly below 1000. The number of those who actively participate in Minesweeper in competitions even hardly exceeds a few hundred.

The following is an attempt to make the pro-sweeping community easily understandable for non-“sweepers”. To ensure better legibility all quotes will be listed at the bottom of the respective page.

³ “What I managed to prove is that the minesweeper game is essentially equivalent in complexity to any of a wide range of known natural and important problems in the literature called *NP-complete* problems.” – [Richard Kaye](#). For Minesweeper it means that it is impossible to prove that a certain solution will be the best possible solution (at least an empirical proof would take extremely long – it is impossible to program a “perfect” solving algorithm)

⁴ 1.88 trillion boards (9*9 squares with 10 mines) vs. the \$1 trillion stimulus package

⁵ As of 2009-12-16 the video of a [former world record](#) on Expert level has 3.130.809 views, “Minesweeper The Movie” has 5.102.471 views on YouTube

⁶ There are currently 936 sweepers listed on the [Minesweeper World Ranking](#)

⁷ The [Minesweeper Fan page](#) on Facebook has more than 120.000 fans

II. The History Of Minesweeper

1. Early Stages

Not too much is known about the early days of the game that is nowadays called Minesweeper. Wikipedia's article about Minesweeper⁸ more or less fails to cover the game's concept's origin, making it seem as if it simply had not existed before it gained worldwide popularity with its inclusion into Windows⁹. Luckily the pro-sweeping community has set up its own wiki, a slowly-but-steadily-growing collection of facts and explanations about Minesweeper, as well as over 10 articles dealing with the history of Minesweeper.

The **Minesweeper Wiki** credits a game called **RLogic** (Relentless Logic) as the first game to introduce the concept of today's popular Minesweeper. With its programming being finished in 1985 by "Conway, Hong and Smith", the game was, after being uploaded to an online "IBM PC user group", for a short time quite popular among programmers¹⁰.

The game RLogic takes place on a grid of 9 by 15 squares over which 10-40 mines are randomly spread (at the beginning of the game the player may choose the number of mines – the more mines, the harder the game will be). The object of the game is to navigate a Marine safely from the top-left to the bottom right-corner of the grid using the arrow keys without stepping on a mine. If you step on a mine you lose. After each move the player gets information about how many mines are located under the squares that are touching the current location on the grid. In the actual Minesweeper game this information is given by the numbers on each square. Like in today's Minesweeper RLogic also stopped the time taken to solve the riddle, though, unlike Minesweeper, RLogic did not save high scores.

In 1987 Tom Anderson published an advanced version of RLogic called **XMines**¹¹. XMines was the first clone of RLogic to use a mouse as well as it introduced many more features later seen in Minesweeper, such as customizable grid size, numbers in the cells and the option to mark squares as safe or as dangerous.

Until 1995 another 4 clones of RLogic were written, however none of them brought up any new features that eventually made it into later versions of Window's Minesweeper.

⁸ "Versions of Minesweeper are frequently bundled with operating systems and GUIs, including Minesweeper in Windows" - [Wikipedia](#)

⁹ "Minesweeper was released on Oct 8 1990 when Microsoft published the first Windows Entertainment Pack." – [Minesweeper Wiki](#)

¹⁰ "Relentless Logic is an early computer game often credited as the inspiration for Windows Minesweeper." – [Minesweeper Wiki](#)

¹¹ "XMines was the first clone of RLogic to use a Mouse. It was also the first to mark mine locations and the first to use numbers in the grid. Essentially, XMines was more than half way to Minesweeper as we know it." – [Minesweeper Wiki](#)

2. Windows Minesweeper

It was in 1990 when the first step that should bring Minesweeper to the world's attention was done. On October 8th in 1990 Microsoft published the first **Windows Entertainment Pack** (WEP), a collection of games that, for the first time, was designed not to run in DOS but in Windows. Amongst games such as Tetris, TicTactics and Taipei, Minesweeper already appeared on the first out of 4 volumes of WEP that were released between 1990 and 1992¹².

Although the WEP version had all the features later versions of Minesweeper have it took until 1992 to gain big international recognition, when the game came bundled with Windows 3.1. Microsoft has been releasing Minesweeper with every new version of Windows since¹³. However, there have been made slightly a few changes to the game over the years:

- WEP (1990): squares open on release of left mouse button, flags are placed by pressing the right button, pressing both buttons at the same time opens several squares at once, timer starts at the last full second on the computers clock (already starting counting from 1.00s), making it almost impossible to get a 1 second score on beginner level
- Windows 95: new graphics that should remain until Windows Vista, no other new features
- Windows 98: timer now starts when the first left or double click was done (when the left mouse button was released over a square)
- Windows ME (2000): a sound feature is added (Do not turn it on. Seriously.)
- Windows Vista: new graphics (the player can chose whether the game is set on water with mines hidden or on grass with flowers instead of mines¹⁴ – this is to be blamed on an Italian group called “International Campaign To Ban Winmine”, whose members regard mines in Minesweeper as offensive to the victims of landmines¹⁵), for the first time not only the single best time but the 5 fastest times on each level are saved, allows to replay the exact same board until it is won, making scores from Vista Minesweeper impossible to be accepted for rankings with other versions' scores¹⁶.

¹² “Minesweeper was released 8 Oct 1990 when Microsoft published the first Windows Entertainment Pack.” – [Minesweeper Wiki](#)

¹³ “Minesweeper became a Microsoft staple, and from 3.1 to 95 to XP and beyond, millions upon millions of people across the world turned to Minesweeper...” - [GameSetWatch](#)

¹⁴ “We added a preference that allows users to change it from looking for mines in a minefield to looking for flowers in a flower field.” - [Microsoft Shell Blog](#) – ‘The UI design minefield - er... flower field?’ at the Internet Archive

¹⁵ “Windows Minesweeper (Winmine) is an offence against the victims of the mines, and to those who sacrifice themselves, risking their own life, clearing the lands contaminated by these implements. We think Microsoft should be aware of this mistake, and in the next versions of Windows substitute the game with something more respectful of the person and of the environment” – [International Campaign to Ban Winmine](#)

¹⁶ “Winmine Vista is not allowed on any ranking because it allows UPK” - [Rules for joining the Minesweeper World Ranking](#)

3. First Rankings

Whenever there is some sort of activity that can be done competitively there will for sure be people willing to compare their achievements. It is no surprise that, not long after Minesweeper was available to play for everyone, who had a computer running with Windows, the first rankings for scores in Minesweeper emerged.

In May 1996 the earliest known ranking was created by Wacharin Wichiramala (Thailand). While providing validation for claimed scores in form of screenshots was optional, the “**Expert World Record**” site, which featured at its final update in 1998 146 sweepers’ scores for the Expert level, remained the most important ranking until 2000¹⁷.

Right on the same day the last update on Wacharin’s page was made, Chris Paradise (USA), at this time listed #1 on the Expert Ranking launched his “**Intermediate Minesweeper World Records Page**”, a ranking that would feature only scores faster than 30 seconds on Minesweeper’s Intermediate level. He managed to collect scores from 23 people before he gave up his page after a little more than a year¹⁸.

In 2000 it seemed that all Minesweeper pages were no longer maintained, which inspired Damien Moore (Canada) to launch “**The Authoritative Minesweeper**”¹⁹, introducing the first **World Ranking** for Minesweeper, based on scores on all 3 standard levels. In the same summer he also invented the requirement of a sum below 100 for the high scores on the 3 standard levels to qualify for a World Rank²⁰. The Authoritative Minesweeper should later become the most important ranking and the home and heart of the Minesweeper community, but in its beginning there was quite a hard time to walk through. Damien was 17 when he started collecting scores and in the first 3 years of the page it occurred several times, that his parents did not allow him to use the internet for a while and he neither could update the ranking, nor tell the sweepers that had sent him their new high scores, why he became months behind time answering their e-mails.

Frustration about the thereby slow rate of updates on Damien’s page made Matt McGinley (USA) create his own ranking, the “**Intermediate Hall Of Fame**” in early 2001²¹. His page was mainly focused on the intermediate level, but it also had a **Top 20 World Ranking**, including scores from all levels²². Before Matt stopped updating his page in late 2002, his page was the first one to feature short biographies, written by the sweepers themselves.

¹⁷ “World record of Minesweeper Expert level“ – [Wacharin's ranking page](#)

¹⁸ “If your best time is under 30 seconds, email me and I will post your top 5 scores under 30 seconds” – [Minesweeper Intermediate World Records Page](#)

¹⁹ “All ranking sites appeared to be dead, so Damien Moore (Canada) created the Authoritative Minesweeper in April 2000 and started collecting scores for each level.” – [Minesweeper Wiki](#)

²⁰ “He also invented the requirement of a sub100 sum to qualify for a world rank.” – [Minesweeper Wiki](#)

²¹ “Matt McGinley (USA) created the Intermediate Hall of Fame in Apr 2001” – [Minesweeper Wiki](#)

²² “This is a top 20 list of the world's best minesweepers-past and present.” – [Intermediate Hall of Fame](#)

4. Clones And Score Validation

By then things were relatively simple and easy, looking back at them from today's perspective. All that sweepers had to do was to play Minesweeper and complete boards in good times. A screenshot of a completed board, which also showed the timer, was enough. Of course people had developed a small sense of how a difficult board looks like, but no one could give concrete reasons when a score seemed suspect²³.

Then, in 2002, the **3BV** was born. "**Bechtel's Board Benchmark Value**" is the minimum number of left clicks it (in theory) takes to solve a Minesweeper board²⁴. The 3BV is largely seen as an approach to measure the difficulty of a Minesweeper board. A low 3BV means fewer required clicks and in most cases it should mean a better time. Though named after Stephan Bechtel (Germany), it was originally Lasse Nyholm (Denmark), who posted the first definition of 3BV in 2001, explaining that a score claimed by another sweeper was highly unlikely for the board in his screenshot²⁵.

Shortly after the discovery of the 3BV another invention was made that meant quite an immense change to the better for the sweeping community: between mid-2002 and late 2003 Sorin Manea (Romania) released the "**Recorder**", the first program to count clicks, 3BV and create videos of Minesweeper games with an accurate timer²⁶. Prior to the Recorder, people had to use screen-capture programs such as Camtasia, if they wanted video validation for their scores. But those programs were rather RAM-intensive, required a lot of video editing and featured no in-game stats, like the Recorder provided them. It didn't take long until most top-ranked sweepers switched to the Recorder with all its advantages²⁷.

However, its fame lasted only for 2 years, because in 2004 Rodrigo Camargo²⁸(Brazil) released the first version of "**Minesweeper Clone**", which not much later should become the most widely spread version of Minesweeper besides the classic Windows' one²⁹. Clone features all parts of the original Windows Minesweeper ('winmine'), but unlike the original it does not allow any cheating. Also it is nearly impossible to manipulate the video replays of Minesweeper games that clone produces. Because of this, Winmine soon was no longer accepted as a version to achieve scores for rankings with, as there was Clone, which was safer, easier to use and also delivered a ton of statistics to the sweeper (It has to be mentioned that

²³ "Matt McGinley claimed that a 53 by Mike Lowder was fake in the Guestbook on Dec 16, 2001. He believed the board was too difficult for a NF player." – [Minesweeper Wiki](#)

²⁴ "This game requires a minimum of 39 left clicks. Each opening (and the numbers it opens) requires one click and each remaining number requires one click. The game places flags when all safe squares are open." – [Minesweeper Wiki](#)

²⁵ "One click per opening and one for every numbered square not touching an opening. I don't think you can say whether a board is good or bad only looking at the number of clicks needed, but I think it has a lot to say." – [Lasse Nyholm](#)

²⁶ [Minesweeper Wiki](#)

²⁷ [Minesweeper Wiki](#)

²⁸ "However, many players began using clones instead of winmine after the introduction of the Clone and Arbiter in 2004 and 2005." – [Minesweeper Wiki](#)

²⁹ "(...) today it is one of the most complete and most widely used Minesweeper versions, even by the great majority of elite players." – [Minesweeper Wiki](#)

most decisions about such issues were made by the community as a whole, although in the end it was still up to the hosts of rankings to carry out these decisions)^{30 31}.

Clone did not stay the only clone for long. In the next year “Rilian³²” released his version of a clone. “**Minesweeper Arbiter**” relied heavily on the elementary structure of Clone, however it differs a lot from Clone in the details, e.g. Arbiter features not even nearly as many statistics as Clone but also features some statistical indices that Clone does not have (e.g. correctness and throughput)³³. Also Arbiter has always been known to have several bugs, some that would even allow cheating³⁴. Not all of them were found in time, which lead to a lot of discussions about scores of Arbiter users, who seemed to improve too fast for some persons’ taste. Eventually Jake Warner’s scores of 9 seconds and 39 seconds were declared invalid because of cheating.³⁵

Currently there are 4 clones accepted for rankings: Arbiter, Clone, Minesweeper X and Viennasweeper^{36 37}. The big majority of professional sweepers use Clone, though among the top ranked players the ratio of Arbiter users is relatively big. The other two versions are only seldom used by most sweepers, usually when not playing competitively.

5. Planet Minesweeper And The Authoritative Minesweeper

Damien Moore’s ranking page, the Authoritative Minesweeper, continued to grow bigger and bigger over the years and was widely seen as the official Minesweeper ranking. But the rate at which Damien updated new high scores was not for all people high enough to be satisfying. Because of this in 2003 Georgi Kermekchiev (Bulgaria) began to copy all new scores from every of Damien’s updates and collected new scores from the places in which the community discussed everything (e.g. new personal high scores). Georgi sent his results to the top players twice each month; however, he did not intend to start a new ranking and rather viewed himself as maintaining the ranking Damien had started until he could update it himself³⁸ again.

³⁰ “Scores above 15 on int and above 60 on exp can be accepted if played on Winmine.” – [I.M.C.](#)

³¹ “Programs to be accepted.” – [I.M.C.](#)

³² Dmitriy Sukhomlynov uses “Rilian” as his nickname - <http://rilian.info/files.php?id=2>

³³ “Throughput is supposed to measure the theoretical efficiency of your solve, i.e. the efficiency that you would have if all your clicks hit their target as intended. Through efficient use of flags and double clicks this can obviously be greater than 1. Correctness on the other hand is the efficiency of your execution. If all clicks hit their target this is 1, but usually it is smaller.” – Posted by Elmar Zimmermann in the Authoritative Minesweeper’s [forum](#)

³⁴ “I managed to secure a copy of the *0.43 demo* version, courtesy of Nikolaj, and I have to say the bug is quite difficult NOT to notice, if one ever tries playing in UPK mode and is persistent enough to find his way through a Rilianesque maze that is.” – Jonian Grazhdani in ‘[Unincluded Features – An Arbiter Investigation](#)’ (page 7)

³⁵ “October 7th, 2007 - Jake Warner - As his scores were recorded on Minesweeper Arbiter v0.43 which has a known bug, the IMC requested further evidence from him. The deadline is October 17th, 2007, otherwise his scores will be removed from the different high score lists.” - [I.M.C.](#)

³⁶ <http://www.minesweeper.info/ranking/rules.html>

³⁷ “ViennaSweeper - Home Edition - Release 2.2 will be added to the list of accepted versions.” – [I.M.C.](#)

³⁸ “As a result, Georgi copied each update and collected new scores from the Guestbook and the Minesweeper Addicts group between 18 Jul 2003 and 15 Jun 2004.” – [Minesweeper Wiki](#)

After almost 1 year of collecting scores Georgi handed over his ranking to **Planète Démineur** (also known as **Planet Minesweeper**), a French Minesweeper ranking that had been founded by Grégoire Duffez (France) in 2001, but had remained rather small compared to the size of other rankings, where the ranking became known as the **Best Ever** list³⁹. Grégoire now created an English version of his page and in the following 3 years until its last update in March 2007 the Best Ever list emerged from a 'more accurate version of the Authoritative Minesweeper' to the 'de facto official world ranking'⁴⁰. Not only did Grégoire successfully remove all insufficiently verified scores from the ranking and began to accept scores achieved on the clones, he also made video evidence mandatory in order to be accepted to the ranking. The ranking grew from roughly 250 sweepers to 421. When Grégoire began to lack the time to update his ranking regularly in late 2006, he handed over his page to Andrew McCauley (Australia), who continued doing occasional updates for another half year⁴¹.

Whilst the Best Ever list had become a separate ranking, Damien still continuously kept on collecting scores and in October 2004, with his ranking being over a year out of date, he made a massive update to his ranking. This left the community in a contradicting situation with suddenly 2 rankings, in which the Authoritative Minesweeper featured more scores, but the Best Ever list had the more accurate ranking⁴². After two years with 2 slightly different rankings the situation became more relaxed again, as Damien had now the time to regularly update his ranking and Grégoire and Andrew no longer could find the time to keep the Best Ever ranking updated. Finally in the latter half of 2007, 4 months after Planète Démineur had seen its last update, Grégoire gifted his ranking to Damien, whose Authoritative Minesweeper grew from 550 to over 940 sweepers listed on the world ranking by December 2009⁴³.

6. Current Situation

With the Best Ever list's administrators having retired in 2007 and the permission to copy scores from it, Damien's ranking is currently undoubtedly regarded as the official Minesweeper world ranking. With over 940 world ranked players as of December 2009, country rankings, score lists for each level, tournament results and scores submitted from a total of over 4000⁴⁴ people, the Authoritative Minesweeper shares more detailed information than any Minesweeper ranking has ever done before. At this time it is the only independent Minesweeper ranking that features international rankings.

³⁹ "Georgi gave the ranking to Planète Démineur after his last update, where it became known as the Best Ever ranking." – [Minesweeper Wiki](#)

⁴⁰ "Planète started to emerge as the site with the most accurate ranking, and several players began calling the Best Ever ranking official in 2006." – [Minesweeper Wiki](#)

⁴¹ "Andrew updated during the next several months but ran into problems." – [Minesweeper Wiki](#)

⁴² "Planète had a smaller world ranking featuring more clone scores, (...). Authoritative had a larger ranking, (...)." – [Minesweeper Wiki](#)

⁴³ "Grégoire gave the rankings to Damien." – [Minesweeper Wiki](#)

⁴⁴ "16 May - Added 'effective dates' for players 3200 to 4000 in database" – Damien Moore's updates [blog](#)

Yet, there are also a few smaller national minesweeper communities as well as smaller Minesweeper rankings:

Roman Gammel had already launched his Russian Minesweeper ranking in 2003, but until 2007 when the first Russian Minesweeper championship took place, it had remained only a small list⁴⁵. Thanks to Roman sharing his ranking's scores with Damien, the Russian country ranking on the Authoritative Minesweeper is with 90 listed sweepers already the 3rd largest after the USA and China. Roman also hosts a monthly online Minesweeper competition on his page and organises the annual Russian Minesweeper championships⁴⁶.

Saolei.net, the Chinese Minesweeper community, was founded in the beginning of 2007 by Zhang Shen Jia⁴⁷. Right in its first year the page grew to over 300 members and had ½ million unique visits. By September 2009 saolei.net had about 1400 registered Chinese sweepers, of which due to the language barrier only 100 appear in Damien's rankings⁴⁸.

Outside the main Minesweeper community, since 2002 there also exists another international Minesweeper ranking at Minesweepers.org, which features its own version of Minesweeper (no additional features – not even a mode for customizable board settings). People are charged 6.50\$ for an account that is needed to upload scores to their rankings⁴⁹. Although Minesweepers.org features only single level score lists and does not have any communication tools such as a chat or a forum for its members, the expert level score list contains already close to 500 names. In addition the page clearly states that its scores are not the best ever but only the best as submitted to their page⁵⁰. The best sweepers of Minesweeper.org would hardly rank among the top 100 on the Authoritative Minesweeper.

⁴⁵ “Все права защищены © 2003-2009 Rogen“ – from minesweeper.ru (Rogen is Roman Gammel's nickname)

⁴⁶ Tournament Results: Moscow 2007, Moscow 2008, Moscow 2009 - www.minesweeper.info/tournaments.html

⁴⁷ “Zhang Shen Jia created a Chinese ranking at saolei.net in January 2007” – [Minesweeper Wiki](#)

⁴⁸ [Minesweeper Country Rankings](#) => China – 106 sweepers listed as of 23 Dec. 09

⁴⁹ Minesweepers.org

⁵⁰ “The current World Record for Expert level, as submitted to Minesweepers.org, is (...).” – Minesweepers.org

III. Professional Minesweeping

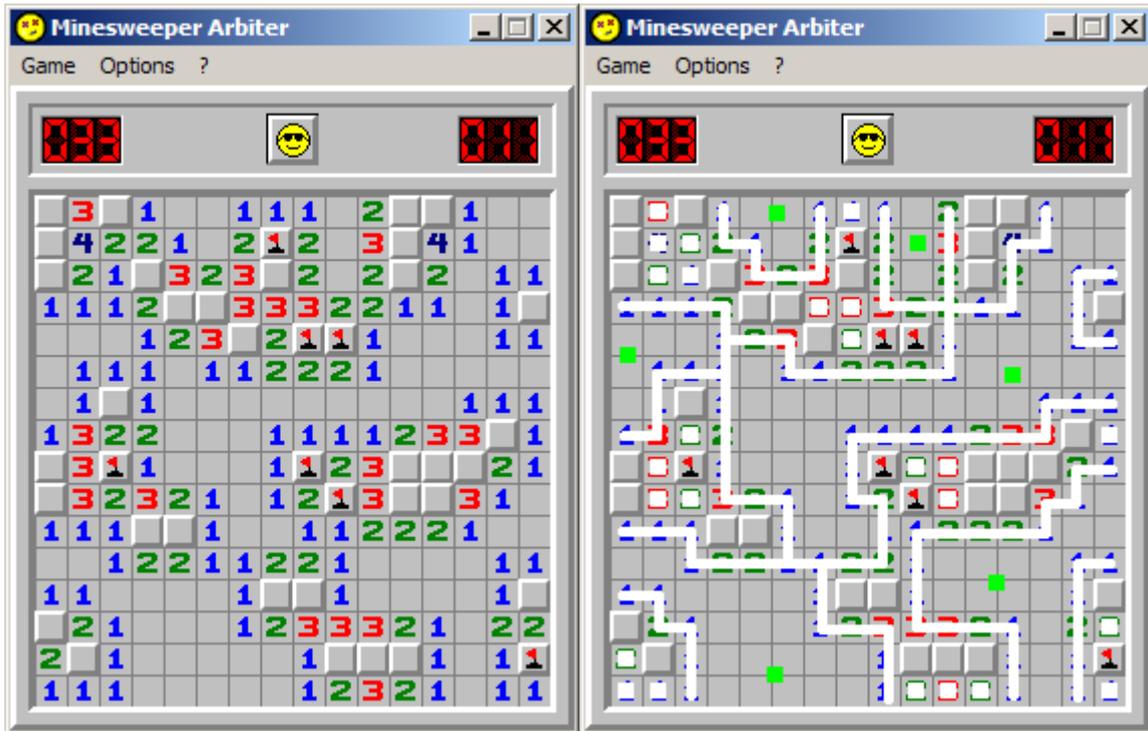
1. The Basics

Being well-informed about the history of Minesweeper might be nice, but in order to gain a deeper understanding about what Minesweeper really means and how it works, now a look at the professional side of the game needs to be taken. How do more or less experienced sweepers actually solve a game, what has to be done to solve a game in general and how is it possible that after years and years of playing sweepers still seem to be able to improve bit by bit?

At first you may think that as soon as one has identified the locations of all the mines on a board the game is won, well, that there now is nothing that stands in the way to winning the board. This assumption is, in general, neither completely right nor wrong, since, if you know all unsafe squares you automatically have the information that all other squares must be safe. But there is also an easier and simpler way to determine quite precisely the amount of work that is in theory needed to solve a board, based on the fact that a board counts as solved as soon as all safe squares are open, no matter how many mines are marked:

The **3BV** tells the exact minimum number of left clicks that would be needed to solve a specific board, given the fact that boards of the same level must not automatically be equally difficult⁵¹. Since whenever a square containing no number, thereby not having any mines in its 8 surrounding squares, is uncovered, all those 8 surrounding squares are automatically uncovered as well, large areas of squares can be opened with 1 single click. The 3BV of a board is therefore the number of all such “**Openings**” plus the number of all numbered squares that do not touch an opening.

⁵¹ “Stephan Bechtel noted in 2002 that he had scored 20 seconds on both a 38 and 72 3BV Intermediate board.” - [3BV - What Is It?](#) (=> Topics => 3BV – What Is It)



This Intermediate board has a 3BV of 31. Once all 6 'Openings' are open, there remain 25 squares that contain a number.

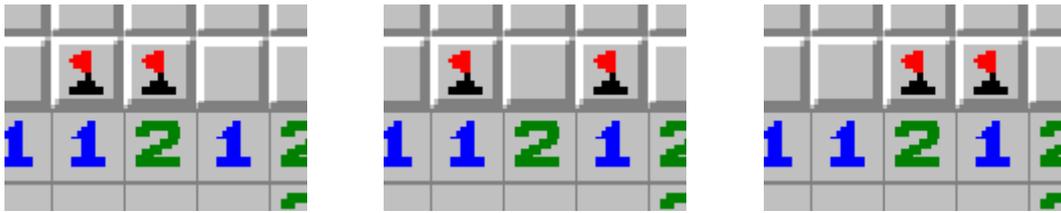
In theory, thanks to the discovery of 3BV, different boards can be compared regarding their difficulty, or moreover, the amount of work to do and the time it takes a sweeper to solve them. The lower the 3BV the shorter it should take to solve the board. As a first approach and for direct comparison of boards 1 3BV can be seen as 1 required click.

Now however, it is not as easy as that one can say that, if a board has a 3BV of 50, all that is needed are 50 clicks that can be done without any thinking. One of the most important aspects in actually playing Minesweeper is recognizing patterns⁵² – finding squares that are safe or contain mines as one progresses in solving the board. With a simple 'if this square contains the mine, then this square would have to be...' tactic everybody should be able to win Minesweeper.



In this pattern the 2 mines for the "2" in the middle could be placed in 3 ways:

⁵² "In general, clearing a board rapidly requires a form of pattern recognition. For example, if an uncovered square is labelled 1, and there is only one covered square touching it, that covered square must be a mine." – [Ivars Peterson's Math Trek: Minesweeper Logic](#)



Only the solution in the middle can be correct. The two solutions on the sides must be wrong, because they have 2 mines touching a “1”.

Sooner or later people using this tactic most likely will change step by step to the method with which all advanced and professional Minesweepers solve their boards: pattern recognition. Starting with easy patterns (3-on-a-wall), that save a few seconds thinking time, advanced sweepers are usually able to immediately recognize the mines in more and more difficult patterns, while the top sweepers even have the time to think about where they most likely will have to click after their current clicks.



The ‘3 on a wall’ pattern

As previously explained, it is all but necessary to mark all mines on a board; it is even possible to play Minesweeper without marking any mines at all. This special way of solving boards is called **non-flagging (NF)** and it even has a small segment on Wikipedia⁵³. Due to the fact that most people learn playing Minesweeper with the usage of flags, NF is by far not as popular as the common FL (flagging – the way Minesweeper is normally played) is. In consequence by today still no one knows with 100% certainty whether any of the 2 solving methods brings a clear advantage. So far it seems that on beginner level NF is indeed faster⁵⁴, on intermediate a small tendency towards NF might exist and that for expert FL is by a relatively big margin faster than NF⁵⁵.

Usually most sweepers use a mixture of FL and NF in their solves, switching back and forth between them several times, always trying to find the fastest solution for each pattern. Sometimes this might be flagging a mine and then opening several 3BV-relevant squares at once by making a double-click, whilst in some cases it might be faster to simply click only on those squares that contain no mines.

In order to be able to achieve their scores, the top ranked sweepers all have had to spend several years and several thousand hours on practicing Minesweeper. A small example might make it easier to understand the enormity of practice it takes a sweeper to enter the top50:

⁵³ German Wikipedia article for [Minesweeper](#)

⁵⁴ Most beginner level records are achieved on boards that require only 2 or 3 left clicks

⁵⁵ The time records for expert level are [33 seconds](#) using flags and [38 seconds](#) using no flags

Let us assume a sweeper spends 3h/day on the weekend and 4h in total during the week on average playing Minesweeper. That are already 10 hours per week⁵⁶. At a constant 4 clicks/second this makes 144.000 clicks/week. Now we assume that our sweeper plays Minesweeper about 40 weeks every year. This means he does close to 6 million clicks per year just playing Minesweeper⁵⁷. Even at those not too extreme stats, luck can already play a very big role, regarding the sweeper's personal high scores, which, at last, are what people play Minesweeper for. So has for example the current time world record for the expert level been set on a board that is regarded as extremely easy, whilst on the other hand in 2007 Manuel Heider (Germany) has lost a game that would have been a new world record at that time on the last click on a 50-50 guess⁵⁸.

Not only does the choice of the right mouse, the right mouse pad and the intensity of practice have an impact on how fast one can sweep, the wrong decisions in those questions can as well have serious consequences. Prominent examples are Damien Moore and Dan Cerveny⁵⁹ (USA) who both got Carpal Tunnel Syndrome⁶⁰, a nerve injury in the wrist and forearm, from overusing their hands' muscles by playing too much Minesweeper, which forced them both to retire from sweeping⁶¹.

2. The World Ranking

The goal of Minesweeper is to finish the boards as fast as possible.

For most rankings the sweepers' personal single best times on one or all 3 standard levels together are compared. In the early stages of Minesweeper, in which high scores were only known in integer seconds and the number of ranked sweepers was relatively small, the community's decisions on who was the best sweeper were easy: The one with the lowest high score on a single level, later with the lowest sum of times on all 3 standard levels, has to be the fastest. With clones that measure the time taken to solve a board as precisely as to a hundredth of a second, the discovery of 3BV and later on the invention of several other indices the judgment of who really was or now is the best Minesweeper has become much more difficult⁶².

A common example for the problem that boards can be extremely easy or difficult is the question how a time of 59.99 seconds on a board with a 3BV of 120 has to be compared to a score of 60.01 seconds on 180 3BV⁶³. Whilst the 120 3BV board has been solved just a bit faster, the other board required at least 60 more clicks to be

⁵⁶ "During this period, I remember playing up to 6 hours a day." – [Dion Tiu](#) (former world record holder on expert level) in his bio on the 2002-2005 active ranking (=>Dion Tiu)

⁵⁷ $3600\text{sec} \cdot 10\text{hours} \cdot 4\text{clicks/sec}$; $144.000\text{clicks} \cdot 40\text{weeks} = 5.760.000\text{clicks}$

⁵⁸ "Manuel Heider (Germany) loses on a misclick having solved 120 of 122 3BV: estimated Expert time is 36!!" – [Minesweeper News](#)

⁵⁹ "Dan wrote his profile in 2003 before retiring with Carpal Tunnel Syndrome" – Dan Cerveny's [profile](#)

⁶⁰ "A review of available scientific(...) indicated that job tasks that involve highly repetitive manual acts or specific wrist postures were associated with incidents of CTS, but causation was not established, and the distinction from work related arm pains that are not carpal tunnel syndrome was not clear." - [Wikipedia](#)

⁶¹ "Several players from the World Rankings have been forced to retire with CTS." - [Minesweeper Wiki](#)

⁶² Since mid-2009 there e.g. exists a [3BV/s World Ranking](#). While time high scores can be the result of plain luck (getting a very easy board), 3BV/s high scores indicate the sweeper's top solving speed (usually on more difficult boards).

⁶³ $120\text{ 3BV} / 59.99\text{ sec} = 2.00\text{ 3BV/s}$ vs. $180\text{ 3BV} / 60.01\text{ sec} = 3.00\text{ 3BV/s}$

solved. In a worse case also a high score set on an extremely easy board with also a very low 3BV can be imagined to occur⁶⁴. In the early days of Minesweeper it happened quite a few times that high scores were broken by several seconds on those easy boards⁶⁵. Extremely easy boards are as a matter of fact also extremely rare. In order to ensure that skill and not luck is the deciding factor in getting good scores, the community decided early to ban boards that have a too low 3BV⁶⁶; to ban boards that are too easy.

As mentioned earlier, the main and most important ranking for the Minesweeper community is the world ranking⁶⁷. Started in 2000, the ranking lists sweepers by the sum of their best scores on each of the 3 standard levels. To qualify for the rankings, the sweepers have to deliver evidence for the total of their high scores being 99 seconds or less. At first the sum of the integer times on each level is compared.

In the case that 2 or more sweepers have the same sum, the integer expert level time is compared, the lower the better. If they are the same, the integer intermediate level high score is compared, again, the lower the better. If there still is a tie, the sum of the scores with decimals is compared. Some older high scores have been achieved in a time before decimals could be delivered. In order to even out the advantages today's sweepers have (e.g. faster computers), those older high scores are treated as if they were XY.00 seconds. In a first approach to modernize the ranking and adjust it to the majority of scores now featuring decimals, a decimal world ranking was created in summer 2009, in sweepers are ranked directly by the decimal sum of their high scores⁶⁸. For the top ranked players, their position on both rankings is pretty much the same. But since a lot of historic scores that do not have decimals do not appear on that specific ranking, for lower ranked players their position on the decimal ranking in most cases differs a lot from their actual rank⁶⁹.

Almost 10 years old, the world ranking lists >900 sweepers and is largely considered as most accurate and precise Minesweeper ranking. Still there remains one more curiosity in Minesweeper that deserves recognition. More often than one may think, it happens that sweepers beat their high scores several times, but still do not improve the integer score and so do not improve significantly or even not at all on the ranking. What started in 2005 as a small joking reference to Roman Gammel having achieved the same integer high score on intermediate level 4 times, similarly to Elmar Zimmermann having tied his expert high score 7 times a half year earlier, eventually became known as 'Elmar Syndrome'⁷⁰. There has never been a definition of how often a high score has to be equalled, but the Minesweeper Wiki currently lists all cases where a record has been tied at least 3 times⁷¹.

⁶⁴ "Ian Fraser (England) shatters his previous record of 39 (set only 7 days earlier) with a 33.95 (3BV=102)." – [Minesweeper News](#) (The accepted minimum 3BV for expert level is 100)

⁶⁵ "Benny Benjamin set a new Expert record Jun 11, 2002 after jumping from 73 to 64 seconds. He decided the jump was a timer error and asked to have the record excluded." – [Minesweeper Wiki](#)

⁶⁶ "Scores will be accepted for the Best Ever List only if achieved on boards with a minimum 3BV of 2 for beginner, 30 for intermediate and 99 for expert" – [I.M.C.](#)

⁶⁷ The Authoritative Minesweeper is listed on the first page on [Google](#) searching for the terms "Minesweeper" and "Ranking"

⁶⁸ [Minesweeper World Ranking](#) (=>Decimal World Ranking)

⁶⁹ Anthony Grazian (USA) is listed #783 on the classic [World Ranking](#) but listed #403 on the Decimal World Ranking

⁷⁰ "Elmar Syndrome is when a player equals their record many times without breaking it." – [Minesweeper Wiki](#)

⁷¹ "Here is an incomplete list of cases where a record was tied at least 3 times." – [Minesweeper Wiki](#)

3. Tournaments

The several rankings are a quite good indicator for which sweepers are the fastest. And with all the security and anti-cheating features the clones have, there may hardly be any faked high scores on the rankings⁷². Still, as towards the rankings only a single game counts, which can be achieved after 10 or as well 1000 hours of playing, there remains the question which sweeper would be the fastest in a face to face competition.

The idea of the first tournaments was to find out which sweeper was the fastest if everyone had the same amount of time and conditions, unlike the world ranking not regarding the single best time but a sweeper's 5 fastest games⁷³.

In February 2005 Gergely Nagy (Hungary) hosted the first live tournament at the Corvinus University of Budapest⁷⁴. All participants were sweeping in the same room and were allowed to bring their own mice and mouse pads. After 3 hours in which they could freely play on Minesweeper Clone, which kept track of their finished games, the sums of each player's 5 best times on intermediate and expert level were compared⁷⁵. With a sum of 355.75 seconds (by today still the 10th best tournament score) Damien Moore (Canada) became the first tournament champion of Minesweeper, beating 18 other competitors⁷⁶.

Right after the competition Christoph Nikolaus (Austria), who finished 5th in Budapest, decided to host a tournament in Vienna. In August 2005 8 sweepers from 5 countries competed at the University of Vienna by, with small changes in details, the same rules as used in Budapest⁷⁷. Unsurprisingly the expert level world record holder at that time Oliver Scheer (Germany) won by a big margin of 115 seconds⁷⁸.

Until 2008 there have been annual tournaments in both cities with altogether 61 participants from 17 different countries. Since 2006 a clone programmed by Christoph Nikolaus, which became official in 2008⁷⁹, has been used at both locations. The '5+5' tournament mode used in Budapest in 2005 has become the standard mode for all other live tournaments since⁸⁰.

Besides Budapest and Vienna there have also been a tournament in Shanghai in 2007⁸¹, since 2007 an annual Russian national championship in Moscow and due to

⁷² In 2009 only [one case](#) of cheating (manipulated high score video) occurred in the Minesweeper community.

⁷³ "The player with the lowest sum of 5 Intermediate and 5 Expert games is the winner." – [The Authoritative Minesweeper](#)

⁷⁴ "The competition was organised by Gergely Nagy and took place on 26th February 2005 at the Corvinus University of Budapest, within the Department of Information Systems." – [The Authoritative Minesweeper](#)

⁷⁵ "The minesweeper version used was Clone 0.96." – [The Authoritative Minesweeper](#)

⁷⁶ [Tournament Results](#) – Christoph Nikolaus' Minesweeper Page

⁷⁷ "After Roman told us, that it would have been cheaper for him to travel to Vienna than to Budapest and that he possibly would like to come here, I decided to try to organize a tourney here in Vienna in summer." – [Christoph Nikolaus](#) in his report about the 2005 Budapest tournament

⁷⁸ [Tournament Results](#) – Christoph Nikolaus' Minesweeper Page

⁷⁹ "April 5th, 2008 ViennaSweeper - Home Edition - Release 2.2 will be added to the list of accepted versions." – [I.M.C.](#)

⁸⁰ Of the last 8 tournaments only [Shanghai 2007](#) and [Vienna 2008](#) used a different mode

⁸¹ [Shanghai 2007 Minesweeper Tournament Results](#)

a lack of international tournaments in 2009 also an international tournament in Stirling⁸². The latest Minesweeper tournament, the Russian championship took place on 28th November 2009 in Moscow⁸³.

Another concept of live competition was introduced in 2006, when an Australian started an online 1 vs. 1 version of Minesweeper⁸⁴. Both participants get to play exactly the same board and whoever is the first to complete it wins. In contrast to the standard Minesweeper hitting a mine on **Minesweeperlive (MSlive)** does not cause the game to end but only gives a 5 seconds penalty, making it interesting for sweepers to choose the optimal mixture of speed and secure clicking⁸⁵. Furthermore does its innovative ranking system bear another challenge as sweepers are awarded points for every board they win or also lose them if their opponent should beat them. The more points an opponent on MSlive has, the more points can be won, the fewer points he has, the fewer can also be won, which forces the top ranked players to play against each other if they want to move up further on the ranking⁸⁶.

A completely different idea of tournaments was introduced in summer 2008 by a crew of sweepers around Anthony Grazian (USA) using a Facebook fan page with the subject Minesweeper⁸⁷ to organize and host a series of online tournaments. Every 7 days participants were given a setting for a new level in custom mode and were free to play as much as they want to get their fastest time on it. To take part and get listed on its ranking sweepers only had to upload a screenshot of their best time to the fan page. At its peak the tournaments saw close to 50 participants per week⁸⁸. However, in July 2009, after almost 30 tournaments Facebook intervened and claimed that, since Anthony and his Crew were not representing an official community, a brand or a corporation, which would have entitled them to run a fan page for Minesweeper⁸⁹, the page had to be closed. The fan page still exists, though its admins are no longer allowed to edit or change anything on it. This was the end of the Facebook Minesweeper Tournaments.

⁸² [UK \(Scotland\) 2009 Minesweeper Tournament Results](#)

⁸³ "The tournament was organised by Roman Gammel and took place on 28th November 2009 at a computer club in Moscow (Playground)." – [The Authoritative Minesweeper](#)

⁸⁴ [Minesweeperlive](#)

⁸⁵ "What happens if I uncover a mine? - You get a penalty of 5 seconds - you can't do anything during this time. After this, the game continues as normal." – [How to play Minesweeperlive](#)

⁸⁶ "Defeating a player with a high rating provides a bigger boost to your rating than defeating a player with a lower rating. The same rating is used over different difficulty levels." – [How to play Minesweeperlive](#)

⁸⁷ [Facebook Minesweeper Fan Page](#)

⁸⁸ "The page currently includes a Ranking, with more than 280 submitted scores, a regularly updated News Feed, and regularly hosts Minesweeper tournaments." – [Minesweeper Wiki](#)

⁸⁹ "You may only use a Page to promote a business or other commercial, political or charitable organization or endeavour (including non-profit organisations, political campaigns, bands and celebrities)." – [Facebook Pages guidelines](#)

4. Miscellaneous

Last but by far not least there is also plenty of trivia⁹⁰ and more or less random but still often enough interesting facts in the universe of professional minesweeping that whenever brought up are usually the start of small-talk and discussions amongst sweepers.

Especially in 2009 new world records are among the most interesting topics. Between August and November the intermediate world record has been broken 4 times and is currently held by Kamil Muranski (Poland) at 8.50 seconds, respectively the expert record has been broken 3 times in 2009 is currently held by Ian Fraser (England)⁹¹ with 33.95 seconds.

Over a decade of tradition in comparing scores might suggest that there are hundreds of rules for every little detail in Minesweeper. Actually, however, the first time that there have been some kinds of official rules for Minesweeper was in 2005. The by the Minesweeper community elected **International Minesweeper Committee**⁹² (**I.M.C.**) decided right in its first year of existence, that too easy boards should no longer be accepted for the rankings, as they could give an unfair advantage. By setting 3BV minimum levels of 2 for beginner, 30 for intermediate and 100 for expert, it was hoped to eliminate extremely easy boards and to prevent unbeatable world records⁹³. In several steps between 2006 and 2008 the I.M.C. also decided which versions of Minesweeper, more precisely which clones, are acceptable for scores submitted to the various rankings. This resulted in currently only 4 clones being accepted for rankings⁹⁴, thus, as the I.M.C. split apart in 2008, there are no rules regarding what has to be done if an updated version of any of the already accepted clones is released.

Where there are rankings and competition there will also be always people who try to betray and cheat. And the Windows version of Minesweeper has more than one security hole. For example the 'xyzyy'-cheat allows to find all the mines of a board before the timer is started⁹⁵, which usually brings an advantage of >50% faster scores. Taking advantage of such **Unfair Prior Knowledge (UPK)** of the board is strictly banned inside the Minesweeper community and already led to disqualifications of sweepers⁹⁶. The 2 most common ways of cheating in Minesweeper however, are speeding up a replay and having a program solve the board for you. Both may fool the average internet user, but should be no problem to discover for every advanced sweeper.

⁹⁰ "This page collects interesting Minesweeper trivia, facts for the truly addicted!" – [Minesweeper Wiki](#)

⁹¹ [World Record History](#) article in the Minesweeper Wiki

⁹² "(...) Roman Gammel posted anonymously in the Guestbook, 4 Sep 2005, suggesting the creation of a new International Minesweeper Committee: (...)" – [Minesweeper Wiki](#)

⁹³ "November 7th, 2005, 3bv limits: Scores will be accepted for the Best Ever List only if achieved on boards with a minimum 3BV of 2 for beginner, 30 for intermediate and 99 for expert" – [I.M.C.](#)

⁹⁴ "Programs to be accepted:" [I.M.C.](#)

⁹⁵ "Type 'xyzyy', press 'Shift' and 'Enter'. This creates a white pixel at the top left corner of your computer screen. If your cursor is above a mine this dot will disappear." – [The Authoritative Minesweeper](#)

⁹⁶ "October 7th, 2007, Jake Warner: As his scores were recorded on Minesweeper Arbiter v0.43 which has a known bug, the IMC requested further evidence from him. The deadline is October 17th, 2007, otherwise his scores will be removed from the different high score lists." – [I.M.C.](#)

A sped up video on the one hand usually has unsteady clicking rhythms. A Minesweeper game played at normal speed is saved as "Normal Playing Speed" on the attached CD - and a fast-forwarded replay under the name "SPED UP". On the other hand computer solvers in most cases are not capable to imitate the way a human brain would solve boards⁹⁷ ("Solving Program" video on the CD).

In the midst of the big load of videos of cheat games, there is one video that should be mentioned in particular. In 2002 to the community completely unknown sweeper James Shannon claimed to have a high score of 38 seconds (which was 4 seconds below the world record of those days) and even delivered a flawless and seemingly perfect video as evidence. The game was just played too perfectly. Since it included neither any single misplaced click, nor the tiniest hesitation to think a bit⁹⁸ and overall gave the impression of being humanly impossible the score was rejected due to suspicion⁹⁹. A few years later Damien Moore eventually spotted an incorrect number in the bottom-right corner, which, at last, reveals that the game has to be with 100% certainty a fake¹⁰⁰.

The video James Shannon originally submitted can be found on the attached CD.

IV. The Minesweeper Community

1. Inside The Community

So far the term 'Minesweeper community' has been used repeatedly without any specific definition or explanation. Mainly this has happened simply because there is no single or static group of individual persons that could be easily defined as 'the' community. It's moreover a steady come and go on more than one network or website related or dedicated to Minesweeper, on which sweepers not only interact with other actives but as well also with retired sweepers, who are still eager to keep in touch with the community. The easiest definition of 'the Minesweeper community' would probably be the whole of all popular Minesweeper pages and rankings and the people that have been or still are active there.

With all its rankings, the Minesweeper wiki and a big archive of old web pages the Authoritative Minesweeper is every now and then referred to as the heart or mind of the Minesweeper community. It would as well be justified to refer to its guestbook (the GB) as the soul of the community. With ~10 new posts every day, around a hundred different posters every year and several times more readers, in its 9 years of

⁹⁷ Most Solving programs only make a difference between mines and other squares and usually put flags on all mines

⁹⁸ At 19 sec on the timer he uncovers the "4" in the top-right corner and immediately moves on to the next square. Normally one would expect him to hesitate for a bit now to see realize that he uncovered a "4" and not a "3". A "3" would have meant that the square directly left to it had to be opened to.

⁹⁹ "The scores were rejected due to suspicion." – [Minesweeper Wiki](#)

¹⁰⁰ "The mistake? There is an incorrect number in the bottom right corner." – [Minesweeper Wiki](#)

existence, the guestbook has become the place for small-talk, postings of new records, discussions and announcements¹⁰¹.

Whatever is posted in the GB can be considered as an official statement. As a matter of fact, with all the sweepers who spent a fairly significant part of their free time on Minesweeper, in consequence usually all have their own individual opinions in discussions. This results often enough in series of lengthy posts. Thus, no matter how deeply-hearted they discuss something, after all, those who one week ago were eagerly searching for arguments for their side still are as well the first to congratulate each other on a new record, to wish a happy birthday or a happy new year.

Although in the present days the majority of discussions take place in other places than the GB, their final outcomes are still regularly posted in there. During the past two years there have been two platforms in particular, that have been host of such discussions: The Authoritative Minesweeper's forum¹⁰² and the '#minesweeper' chat room on IRC¹⁰³.

While discussions through the forum are rather slow, as they depend on how often people check for replies to their last postings, everything being said there being available to read for everyone at any time leads to usually detailed and reasonable outcomes. So has for example Elmar Zimmermann started a discussion thread on 2009-07-30, in which he suggested a new benchmark value to allow a by far better comparison of the difficulty of different boards than 3BV¹⁰⁴. 3 months and 20 replies later 2 indices called ZiNi and HumanZiNi¹⁰⁵ were implemented into Minesweeper Arbiter¹⁰⁶, the second-most used clone¹⁰⁷.

The #minesweeper chat room on the other hand allows a real-time discussion between sweepers. This way more topics can be talked about in less time and as only users that are logged in in the chat get to see the actual discussion, the range of topics is a lot wider than in the GB or the forum. So has for example most of the bug-finding for the now updated version of Minesweeper Arbiter¹⁰⁸ taken place on IRC, whereas the updated versions of the program with the bugs fixed were posted in the Forum. In addition ZiNi and HumanZiNi that have been thought about in the forum are now mostly used in discussions about single boards in the #minesweeper chat room.

¹⁰¹ "Feel free to chat, make suggestions, or tell your scores!" – The Authoritative Minesweeper [Guestbook](#)

¹⁰² The Authoritative Minesweeper [Forum](#)

¹⁰³ "You can also chat with us on mIRC - server irc.newnet.net, port 6667, channel #minesweeper" – The Authoritative Minesweeper [Guestbook](#)

¹⁰⁴ "[new benchmark: 3bv for flaggers](#)"

¹⁰⁵ "[Greedy ZiNi](#)" and "[Human ZiNi](#)" – named after its developers Elmar Zimmermann and Christoph Nikolaus

¹⁰⁶ "0.47 d1 – 19 Sep 2009" – (...) New basic indices supported: (...) HZINI - Human ZiNi value" – [Minesweeper Wiki](#)

¹⁰⁷ Currently 17 of the [100 fastest sweepers](#) (as listed on the Minesweeper World Ranking) have 1 or more high scores set on Arbiter

¹⁰⁸ "[Arbiter development](#)" – Maksim Bashov (Russia) decided to rewrite Arbiter. Between September and November 2009 he released 7 debug versions and 1 final version.

2. Outside The Community

Lastly the opinions and views of the people outside the Minesweeper community deserve to be mentioned as well. While the video of a former world record in Minesweeper has over 3 million views and has been commented on almost 6000 times the vast majority of those comments is either calling out the video to be a fake, claiming that it must have been done by a machine, insulting the former world record holder or just asking how Minesweeper is played in general¹⁰⁹. Other Minesweeper videos on YouTube show, besides high scores of random persons, mainly how cheats in Minesweeper work and solving programs clearing boards. But there also exist videos like “Chasing Dion Tiu¹¹⁰”, which shows the solving of several Minesweeper boards and step by step evolves into a visual psychedelic rush caused by too much playing:

The “Chasing Dion Tiu” video can be found on the attached CD.

Furthermore the infamous “Minesweeper the Movie” has to be mentioned. In this video Collegehumour.com turns Minesweeper into a real life game¹¹¹ and, although it contains countless jokes, it at no time lampoons the game, something that Weird Al’s song and video “white and nerdy¹¹²” do, by implying playing Minesweeper is nerdy¹¹³.

Even organisations such as the U.N. or the International Campaign to Ban Winmine have been using the popularity of Minesweeper to raise attention on their causes. The U.N. used a screenshot of a Minesweeper board in a print ad in its campaigns against landmines, with the opened squares forming the layout of the continents of the earth, to illustrate in which parts of the world landmines are a problem¹¹⁴. The caption to the image reads “This is a game we cannot lose”, stressing the seriousness of the issue.

¹⁰⁹ “38 seconds minesweeper expert former world record” – [YouTube](#) video of Dion Tiu’s former world record

¹¹⁰ “[CHASING DION TIU](#)” – YouTube video

¹¹¹ “[Minesweeper The Movie](#)” YouTube Video

¹¹² “[White and Nerdy](#)” – Music Video on YouTube

¹¹³ “I’m a whiz at minesweeper I can play for days. Once you see my sweet moves you’re gonna stay amazed, my fingers movin’ so fast I’ll set the place ablaze” – Lyrics to “White and Nerdy” as posted on [YouTube](#)

¹¹⁴ “This UN campaign also includes a print ad component that plays on the minesweeper computer game.” – [culture-buzz.com/blog](#)



V. Conclusion

In 2010 Minesweeper will be as little as 25 years old (starting counting from 1985 when its main concept has been used the first time in RLogic). The games simple and basic rules and the fact that it comes for free with every version of Windows paved the way for Minesweeper to become one of the most widely spread computer games ever. It is basically on every computer and millions of people all over the world love it for being a mind-challenging but not too difficult distraction or just play it to relax a bit.

Right after its inclusion into Windows people not only started comparing their best games, they also set up rankings that should grow bigger and bigger. Several fans of the game wrote their own Minesweeper programs and nowadays there even are people who travel long distances to meet and compete with other sweepers in annual championships.

Minesweeper's popularity on the internet is hard, if not impossible, to deny. With over 120.000 fans on Facebook and millions of views on YouTube it outranks every other similar single-player computer game. Not to forget the U.N. ad campaign against landmines that uses Minesweeper to illustrate its cause.

All this leaves only one possible conclusion: There must be more to it. It is not just only a simple and old computer game. – Minesweeper has become a part of Windows; it is for computer games (almost) as legendary as Tetris or Pong are for video games in general.

Minesweeper is definitely more than just a computer game.

VI. My Personal Experiences With Minesweeper

I have been playing Minesweeper since I was 3 years old. It is the first computer game I ever played. While back then I only occasionally played, I didn't get bored and more or less kept playing it every now and then until I was 15. By then I had reached about 120 seconds as high score for Expert level. After breaking 100 seconds I began looking for Minesweeper on the internet and couldn't believe that there were people who were 3 times as fast as me. I joined the ranking on the Authoritative Minesweeper to see how many other sweepers I could beat. Not long and my scores were good enough first to join the world ranking in summer 2007 and then in early 2008 to join the top 100. Since then I gradually improved my ranking and am currently listed as the 8th fastest Minesweeper player in history. In summer 2009 I took part in and won the Minesweeper World Championship in Stirling (Scotland).

Minesweeper is a lot more than just a computer game for me. On the one hand that is because of the time and dedication I have spent on it over the last few years. On the other hand because of the fun the Minesweeper community is for me. Since 2007 I am regularly (probably almost every day) chatting with other Minesweepers via Facebook and the IRC-chat. While a big part of the chatting is about Minesweeper it is by far not the only thing we are chatting and discussing about. I'd even count quite a lot of Minesweeper players as my friends.

The Minesweeper Tournament in Scotland in 2009 was without any doubt by far the biggest highlight in my Minesweeper career. It is just impossible to put into words how awesome it was for me to meet those other sweepers I have been chatting with for over 2 years. The next and even bigger highlight will be the 2010 World Championship that I have been asked by several sweepers to host in Munich.

VII. Sources

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- 6) <http://www.minesweeper.info/worldranking.html?page=10>
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- 8) [http://en.wikipedia.org/wiki/Minesweeper_\(computer_game\)#Distribution_and_variants](http://en.wikipedia.org/wiki/Minesweeper_(computer_game)#Distribution_and_variants)
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- 17) <http://www.minesweeper.info/archive/ExpertWorldRecords1998/website.html>
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- 23) and 25) http://www.minesweeper.info/wiki/3BV#Counting_Clicks
- 24) http://www.minesweeper.info/wiki/3BV#How_it_Works
- 26) <http://www.minesweeper.info/wiki/Recorder>
- 27) and 28) <http://www.minesweeper.info/wiki/Recorder#Acceptance>
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- 30) 35) 66) 79) 93) and 96) <http://minesweeper.cc/index.php?page=decisions>
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- 46) <http://www.minesweeper.info/tournaments.html>
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- 49) <http://minesweepers.org/membershipinfo.asp>
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- 77) <http://www.dotti.at/ms/index.php?data=5&men2=1&men3=2&style=1>
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<http://www.minesweeper.info/tournaments/Vienna2008.html>
- 82) <http://www.minesweeper.info/tournaments/UK2009.html>
- 83) <http://www.minesweeper.info/tournaments/Moscow2009.html>
- 84) <http://minesweeperlive.com/index.php>
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- 99) and 100) http://www.minesweeper.info/wiki/Famous_Cheaters#A_Perfect_Crime
- 101) and 103) <http://www.minesweeper.info/guestbook/>
- 102) <http://www.minesweeper.info/forum/>
- 104) <http://www.minesweeper.info/forum/viewtopic.php?f=15&t=70&start=0&st=0&sk=t&sd=a>

105) <http://www.minesweeper.info/forum/viewtopic.php?p=422#p422> and
<http://www.minesweeper.info/forum/viewtopic.php?p=422#p424>
106) <http://www.minesweeper.info/wiki/Arbiter>
108) <http://www.minesweeper.info/forum/viewtopic.php?f=26&t=82>
109) <http://www.youtube.com/watch?v=oQ9iEDMLZpw>
110) http://www.youtube.com/watch?v=_e7zUrTdOQw
112) and 113) <http://www.youtube.com/watch?v=Q42tEnt9GWg>
114) <http://www.culture-buzz.com/blog/UN-s-Landmine-Clearing-Campaign-2030.html>

All images except the one on page 23 are screenshots taken from “Minesweeper Arbiter” or “Minesweeper Clone” and have been edited with Microsoft Paint. The image on page 23 is taken from source 114)

VIII. Minesweeper Dictionary

3BV: Abbreviated from Bechtel’s Board Benchmark Value. An index used to determine the individual difficulty of each board

Arbiter: A clone of Minesweeper. Accepted for official rankings.

Authoritative Minesweeper, the: www.minesweeper.info – Currently the main Minesweeper community and host of all major rankings.

Beginner: One of the 3 default levels. 8 by 8 squares with 10 mines.

Board, a: A single game on a set level.

Clone: Also known as Minesweeper Clone. The first clone of Minesweeper that allowed automatic recording of all games.

Clone, a: A version of Minesweeper that is not made by Microsoft.

Dion Tiu: Former world record holder.

Expert: One of the 3 default levels: 16 by 30 squares with 99 mines

Flag: A right click on a square places a flag on it and marks it as a mine.

FL-flagging: Playing Minesweeper using flags.

Guestbook, the: Also referred to as the GB. The guestbook on the Authoritative Minesweeper.

I.M.C, the: The International Minesweeper Committee. A self-given governing body elected by the Minesweeper community. Abandoned in 2007.

Intermediate: One of the 3 default levels. 16 by 16 squares with 40 mines.

IRC-chat, the: the #minesweeper channel on the IRC chat system.

Level, a: Determined by the settings for height, width and number of mines.

NF-nonflagging: Playing Minesweeper without using any flags.

Opening, an: An area of squares that can be opened with a single click. Must have at least 1 empty square in the middle.

Pro-Sweeping: Playing Minesweeper very well. Also: Pro-Sweeper

Sweeping: Playing Minesweeper. Also: Sweeper

UPK: Unfair Prior Knowledge. Knowing any detail about the next game before the timer is started. Considered as cheating.

WEP: Windows Entertainment Pack. A collection of computer games released in the early nineties

Winmine: Windows Minesweeper.

IX. Appendix:

Attachment: 1 CD

The CD contains:

Minesweeper_(arial).doc
Minesweeper_(times).doc

All websites listed in VI. Sources (75 .mht files and 1 pdf file)

SPED UP.avi video
Solving Program.avi video
Normal Playing Speed.avi video
CHASING DION TIU.avi video
James Shannon Cheat Video.avi video
Minesweeper – The Movie.avi video

Ich versichere, dass ich die vorliegende Arbeit selbstständig verfasst und keine außer den angegebenen Hilfsmitteln verwendet habe.

Gez. Fritz Löhr

München, den 27.01.2010