= Space Invaders =

Space Invaders (Japanese : ?????????? , Hepburn : Sup?su Inb?d?) is an arcade video game created by Tomohiro Nishikado and released in 1978 . It was originally manufactured and sold by Taito in Japan , and was later licensed for production in the United States by the Midway division of Bally . Space Invaders is one of the earliest shooting games and the aim is to defeat waves of aliens with a laser cannon to earn as many points as possible . In designing the game , Nishikado drew inspiration from popular media : Breakout , The War of the Worlds , and Star Wars . To complete it , he had to design custom hardware and development tools .

It was one of the forerunners of modern video gaming and helped expand the video game industry from a novelty to a global industry (see golden age of video arcade games) . When first released , Space Invaders was very successful .

The game has been the inspiration for other video games , re @-@ released on numerous platforms , and led to several sequels . The 1980 Atari 2600 version quadrupled the system 's sales and became the first " killer app " for video game consoles . Space Invaders has been referenced and parodied in multiple television shows , and been a part of several video game and cultural exhibitions . The pixelated enemy alien has become a pop culture icon , often used as a synecdoche representing video games as a whole .

= = Gameplay = =

Space Invaders is a two @-@ dimensional fixed shooter game in which the player controls a laser cannon by moving it horizontally across the bottom of the screen and firing at descending aliens . The aim is to defeat five rows of eleven aliens ? some versions feature different numbers ? that move horizontally back and forth across the screen as they advance towards the bottom of the screen . The player defeats an alien , and earns points , by shooting it with the laser cannon . As more aliens are defeated , the aliens ' movement and the game 's music both speed up . Defeating the aliens brings another wave that is more difficult , a loop which can continue without end .

The aliens attempt to destroy the cannon by firing at it while they approach the bottom of the screen . If they reach the bottom , the alien invasion is successful and the game ends . A special " mystery ship " will occasionally move across the top of the screen and award bonus points if destroyed . The laser cannon is partially protected by several stationary defense bunkers ? the number varies by version ? that are gradually destroyed by a numerous amount of blasts from the aliens or player .

= = = Scoring = = =

Alien invaders : 10 (bottom two rows) , 20 (middle and second from top rows) , or 30 points (top row) .

Mystery ship : 50 , 100 , 150 , or 300 points .

Points earned for shooting mystery ship varies .

Players earn an extra life at either 1 @,@ 000 or 1 @,@ 500 points , and none thereafter .

= = Development = =

Space Invaders was created by Tomohiro Nishikado , who spent a year designing the game and developing the necessary hardware to produce it . The game 's inspiration is reported to have come from varying sources , including an adaptation of the mechanical game Space Monsters released by Taito in 1972 , and a dream about Japanese school children who are waiting for Santa Claus and are attacked by invading aliens . However , Nishikado has cited Atari 's arcade game Breakout as his inspiration . He aimed to create a shooting game that featured the same sense of achievement from completing stages and destroying targets , but with more complex graphics . Nishikado used a similar layout to that of Breakout , but altered the game mechanics . Rather than bounce a ball to attack static objects , players are given the ability to fire projectiles at their own discretion to attack

moving enemies .

Early enemy designs included tanks , combat planes , and battleships . Nishikado , however , was not satisfied with the enemy movements ; technical limitations made it difficult to simulate flying . Humans would have been easier to simulate , but Nishikado considered shooting them immoral . After seeing a magazine feature about Star Wars , he thought of using a space theme . Nishikado drew inspiration for the aliens from H. G. Wells ' The War of the Worlds ? he had watched the 1953 film adaptation as a child ? and created initial bitmap images after the octopus @-@ like aliens . Other alien designs were modeled after squids and crabs . The game was originally titled Space Monsters , inspired by a popular song in Japan at the time (" Monster ") , but was changed to Space Invaders by Nishikado 's superiors .

= = = Hardware = = =

Because microcomputers in Japan were not powerful enough at the time to perform the complex tasks involved in designing and programming Space Invaders , Nishikado had to design his own custom hardware and development tools for the game . He created the arcade board using new microprocessors from the United States . The game uses an Intel 8080 central processing unit , and features raster graphics on a CRT monitor and monaural sound hosted by a combination of analogue circuitry and a Texas Instruments SN76477 sound chip . Despite the specially developed hardware , Nishikado was unable to program the game as he wanted ? the Control Program board was not powerful enough to display the graphics in color or move the enemies faster ? and he considered the development of the hardware the most difficult part of the whole process . While programming the game , Nishikado discovered that the processor was able to render the alien graphics faster the fewer were on screen . Rather than design the game to compensate for the speed increase , he decided to keep it as a challenging gameplay mechanism .

Space Invaders was first released in a cocktail @-@ table format with black and white graphics , while the Western release by Midway was in an upright cabinet format . The upright cabinet uses strips of orange and green cellophane over the screen to simulate color graphics . The graphics are reflected onto a painted backdrop of a moon against a starry background . Later Japanese releases used rainbow @-@ colored cellophane , such as T.T. Space Invaders in 1978 , followed by a version with a full color display . The cabinet artwork features large , humanoid monsters not present in the game . Nishikado attributes this to the artist basing the designs on the original title , Space Monsters , rather than referring to the in @-@ game graphics .

= = = Music = = =

Despite its simplicity , the music to Space Invaders was revolutionary in the gaming industry . Videogame scholar Andrew Schartmann identifies three aspects of the music that would have a significant impact on the development of game music :

Whereas videogame music prior to Space Invaders was restricted to the extremities (i.e. , a short introductory theme with game @-@ over counterpart) , the alien @-@ inspired hit featured continuous music ? the well @-@ known four @-@ note loop ? throughout , uninterrupted by sound effects . " It was thus the first time that sound effects and music were superimposed to form a rich sonic landscape . Not only do players receive feedback related directly to their actions through sound effects ; they also receive stimulus in a more subtle , non @-@ interactive fashion through music . "

The music interacts with on @-@ screen animation to influence the emotions of the player . " That seemingly pedestrian four @-@ note loop might stir us in the most primitive of ways , but that it stirs us at all is worthy of note . By demonstrating that game sound could be more than a simple tune to fill the silence , Space Invaders moved videogame music closer to the realm of art . "

The music popularized the notion of variability ? the idea that music can change in accordance with the ongoing narrative . The variable in Space Invaders (tempo) is admittedly simple , but its implications are not to be underestimated . " Over the years , analogous strategies of variation

would be applied to pitch , rhythm , dynamics , form , and a host of other parameters , all with the goal of accommodating the nonlinear aspect of videogames . "

At the deepest of conceptual levels , one would be hard @-@ pressed to find an arcade game as influential to the early history of videogame music as Space Invaders . Its role as a harbinger of the fundamental techniques that would come to shape the industry remains more or less unchallenged . And its blockbuster success ensured the adoption of those innovations by the industry at large .

= = Impact and legacy = =

After the first few months following its release in Japan , the game became very popular . Specialty arcades opened with nothing but Space Invaders cabinets , and by the end of 1978 , Taito had installed over 100 @,@ 000 machines and grossed over $ 600 million in Japan alone . Within two years by 1980 , Taito had sold over 300 @,@ 000 Space Invaders arcade machines in Japan , in addition to 60 @,@ 000 machines in the United States , where prices ranged from $ 2000 to $ 3000 for each machine , within one year . The arcade cabinets have since become collector 's items with the cocktail and cabaret versions being the rarest . By mid @-@ 1981 , more than four billion quarters , or $ 1 billion , had been grossed from Space Invaders machines , and it would continue to gross an average of $ 600 million a year through to 1982 , by which time it had grossed $ 2 billion in quarters (equivalent to $ 7 @.@ 26 billion in 2016) , with a net profit of $ 450 million (equivalent to $ 1 @.@ 63 billion in 2016) . This made it the best @-@ selling video game and highest @-@ grossing entertainment product of its time , with comparisons made to the then highest @-@ grossing film Star Wars , which had grossed $ 486 million in movie tickets (costing $ 2 @.@ 25 each on average) with a net profit of $ 175 million . Space Invaders had earned Taito profits of over $ 500 million . The 1980 Atari 2600 version was the first official licensing of an arcade game and became the first " killer app " for video game consoles by quadrupling the system 's sales . It sold over two million units in its first year on sale as a home console game , making it the first title to sell a million cartridges . Other official ports of the game were made for the Atari 8 @-@ bit computer line and Atari 5200 console . Taito released it for the NES in 1985 (Japan only) . Numerous unofficial clones were made as well , such as the popular computer games Super Invader (1979) and TI Invaders (1981) , which was the top @-@ selling computer game for the TI @-@ 99 / 4A through at least 1982 .

An oft @-@ quoted urban legend states that there was a shortage of 100 @-@ yen coins ? and subsequent production increase ? in Japan attributed to the game , although in actuality , 100 @-@ yen coin production was lower in 1978 and 1979 than in previous or subsequent years . The claim also doesn 't hold up to logical scrutiny ; arcade operators would have emptied out their machines and taken the money to the bank , thus keeping the coins in circulation . Reports from those living in Japan at the time indicate " nothing out of the ordinary ... during the height of the Space Invaders invasion . "

Game designer Shigeru Miyamoto considers Space Invaders to be the game that revolutionized the video game industry ; he was never interested in video games before seeing it . Hideo Kojima also described it as the first video game that impressed him and got him interested in video games . Several publications ascribed the expansion of the video game industry from a novelty into a global industry to the success of the game . Edge magazine attributed the shift of video games from bars and arcades to more mainstream locations like restaurants and department stores to Space Invaders . Its popularity was such that it was the first game where an arcade machine 's owner could make up for the cost of the machine in under one month , or in some places within one week .

Technology journalist Jason Whittaker credited the game 's success to ending the video game crash of 1977 , which had earlier been caused by Pong clones flooding the market , and beginning the golden age of video arcade games . According to The Observer , the home console versions were popular and encouraged users to learn programming ; many who later became industry leaders . 1UP.com stated that Space Invaders showed that video games could compete against the major entertainment media at the time : movies , music , and television . IGN attributed the launch of the arcade phenomenon in North America in part to Space Invaders . Electronic Games credited the

game 's success as the impetus behind video gaming becoming a rapidly growing hobby and as " the single most popular coin @-@ operated attraction of all time . " Game Informer considered it , along with Pac @-@ Man , one of the most popular arcade games that tapped into popular culture and generated excitement during the golden age of arcades . IGN listed it as one of the " Top 10 Most Influential Games " in 2007 , citing the source of inspiration to video game designers and the impact it had on the shooting genre . The Times ranked it No. 1 in its list of " The ten most influential video games ever " in 2007 . 1UP ranked it at No. 3 in its list of " The 60 Most Influential Games of All Time , " stating that , in contrast to earlier arcade games which " were attempts to simulate already @-@ existing things , " Space Invaders was " the first video game as a video game , instead of merely a playable electronic representation of something else . " In 2008 , Guinness World Records listed it as the top @-@ rated arcade game in technical , creative , and cultural impact . Entertainment Weekly named Space Invaders one of the top ten games for the Atari 2600 in 2013 . In 2015 , the World Video Game Hall of Fame selected Space Invaders as one of the finalists for its 2015 induction class .

 As one of the earliest shooting games , it set precedents and helped pave the way for future titles and for the shooting genre . Space Invaders popularized a more interactive style of gameplay with the enemies responding to the player controlled cannon 's movement , and was the first video game to popularize the concept of achieving a high score , being the first to save the player 's score . While earlier shooting games allowed the player to shoot at targets , Space Invaders was the first in which targets could fire back at the player . It was also the first game where players were given multiple lives , had to repel hordes of enemies , could take cover from enemy fire , and use destructible barriers , in addition to being the first game to use a continuous background soundtrack , with four simple diatonic descending bass notes repeating in a loop , which was dynamic and changed pace during stages , like a heartbeat sound that increases pace as enemies approached .

 It also moved the gaming industry away from Pong @-@ inspired sports games grounded in real @-@ world situations towards action games involving fantastical situations . Whittaker commented that Space Invaders helped action games become the most dominant genre on both arcades and consoles , through to contemporary times . Guinness World Records considered Space Invaders one of the most successful arcade shooting games by 2008 . In describing it as a " seminal arcade classic " , IGN listed it as the number eight " classic shoot ' em up " . Space Invaders set the template for the shoot ' em up genre . Its worldwide success created a demand for a wide variety of science fiction games , inspiring the development of arcade games , such as Atari 's Asteroids , Williams Electronics ' Defender , and Namco 's Galaxian and Galaga , which were modeled after Space Invaders 's gameplay and design . This influence extends to most shooting games released to the present day , including first @-@ person shooters such as Wolfenstein , Doom , Halo and Call of Duty . Space Invaders also had an influence on early computer dungeon crawl games such as Dungeons of Daggorath , which used similar heartbeat sounds to indicate player health .

=== Remakes and sequels ===

 Space Invaders has been remade on numerous platforms and spawned many sequels . Re @-@ releases include ported and updated versions of the original arcade game . Ported versions generally feature different graphics and additional gameplay options ? for example , moving defense bunkers , zigzag shots , invisible aliens , and two @-@ player cooperative gameplay . Ports on earlier systems like the Atari home consoles featured simplified graphics , while later systems such as the Super Nintendo Entertainment System and PlayStation featured updated graphics . Later titles include several modes of gameplay and integrate new elements into the original design . For example , Space Invaders Extreme , released on the Nintendo DS and PlayStation Portable , integrated musical elements into the standard gameplay . A spin @-@ off for WiiWare , Space Invaders Get Even , allows players to control the aliens instead of the laser cannon .

 In 1980 , Bally Midway released a pinball version of the game . However , few elements from the original game are included , and the aliens instead resemble the xenomorphs from the film Alien ; Bally Midway was later sued over the game 's resemblance to designs by H. R. Giger . Different

ports have been met with mixed receptions ; the Atari 2600 version was very successful while the Nintendo Entertainment System version was poorly received .

Taito has released several arcade sequels that built upon the basic design of the original . The first was Space Invaders Part II in 1979 ; it featured color graphics , an attract mode , and new gameplay elements , and added an intermission between gameplay . According to the Killer List of Video Games , this was the first video game to include an intermission . The game also allowed the player with the top score to sign their name on the high score table . This version was released in the United States as Deluxe Space Invaders (also known as Space Invaders Deluxe) , but featured a different graphical color scheme and a lunar @-@ city background . Another arcade sequel , titled Space Invaders II , was released exclusively in the United States . It was in a cocktail @-@ table format with very fast alien firing and a competitive two @-@ player mode . During the summer of 1985 , Return of the Invaders was released with updated color graphics , and more complex movements and attack patterns for the aliens . Subsequent arcade sequels included Super Space Invaders ' 91 , Space Invaders DX , and Space Invaders ' 95 . Each game introduced minor gameplay additions to the original design . Like the original game , several of the arcade sequels have become collector 's items , though some are considered rarer . In 2002 , Taito released Space Raiders , a third @-@ person shooter reminiscent of Space Invaders .

The game and its related games have been included in video game compilation titles . Space Invaders Anniversary was released in 2003 for the PlayStation 2 and included nine Space Invader variants . A similar title for the PlayStation Portable , Space Invaders Pocket , was released in 2005 . Space Invaders , Space Invaders Part II and Return of the Invaders are included in Taito Legends , a compilation of Taito 's classic arcade games released in 2005 on the PlayStation 2 , Xbox , and PC . Super Space Invaders ' 91 , Space Invaders DX and Space Invaders ' 95 were included in Taito Legends 2 , a sequel compilation released in 2006 .

=== In popular culture ===

Many publications and websites use the pixelated alien graphic as an icon for video games in general , including video game magazine Electronic Gaming Monthly , technology website Ars Technica , and concert event Video Games Live . There have also been Space Invaders themed merchandising , including necklaces and puzzles . The trend continues to this day , with handmade sites like Etsy and Pinterest showcasing thousands of handmade items featuring Space Invaders characters .

The game ? and references to it ? has appeared in numerous facets of popular culture . Soon after the game 's release , hundreds of favourable articles and stories about the emerging video game medium popularized by Space Invaders aired on television and were printed in newspapers and magazines . The Space Invaders Tournament , held by Atari in 1980 and won by Bill Heineman , was the first electronic sports event and attracted more than 10 @,@ 000 participants , establishing video gaming as a mainstream hobby . The Arcade Awards ceremony was created that same year to honour the best video games , with Space Invaders winning the first Game of the Year award . The impact of Space Invaders on the video game industry has been compared to that of The Beatles in the pop music industry . Considered " the first blockbuster video game , " Space Invaders became synonymous with video games worldwide for some time .

Within a year of the game 's release , the Japanese PTA unsuccessfully attempted to ban the game for allegedly inspiring truancy . In North America , doctors identified a condition called the " Space Invaders elbow " as a complaint , while a physician in The New England Journal of Medicine named a similar ailment the " Space Invaders Wrist " . Space Invaders was also the first game to attract political controversy , when a 1981 Private Member 's Bill called the " Control of Space Invaders (and other Electronic Games) Bill " drafted by British Labour MP George Foulkes attempted to allow local councils to restrict the game , and those like it , by licensing for its " addictive properties " and for causing " deviancy " . Conservative MP Michael Brown defended the game as " innocent and harmless pleasure " which he himself had enjoyed that day , and criticized the bill as an example of " Socialist beliefs in restriction and control " . A motion to bring the bill before Parliament was defeated

by 114 votes to 94 votes ; the bill itself was never considered by Parliament .

= = = = Music = = = =

Musicians drew inspiration for their music from Space Invaders . Video Games Live performed audio from the game as part of a special retro " Classic Arcade Medley " .
The pioneering Japanese synthpop group Yellow Magic Orchestra reproduced Space Invaders sounds in its 1978 self @-@ titled album and its hit single " Computer Game " , the latter selling over 400 @,@ 000 copies in the United States .
Other pop songs based on Space Invaders soon followed , including disco records such as " Disco Space Invaders " (1979) by Funny Stuff , and the hit songs " Space Invader " (1980) by The Pretenders , " Space Invaders " (1980) by Uncle Vic and the Australian hit " Space Invaders " (1979) by Player One (known in the US as Playback) , which in turn provided the bassline for Jesse Saunders ' " On and On " (1984) , the first Chicago house music track .
Space Invaders is referenced in the lyrics to Rush 's 1981 hit song " Tom Sawyer , " and the game is singled out for special thanks in the liner notes to the band 's Permanent Waves album .
The game was also sampled in I @-@ F 's " Space Invaders Are Smoking Grass " (1997) , the first electroclash record .
In honor of the game 's 30th anniversary , Taito produced an album titled Space Invaders 2008 . The album is published by Avex Trax and features music inspired by the game . Taito 's store Taito Station also unveiled a Space Invaders themed music video .

= = = = Television and film = = = =

Multiple television series have aired episodes that either reference or parody the game and its elements ; for example , Danger Mouse , That ' 70s Show , Scrubs , Chuck , Robot Chicken. and The Amazing World of Gumball .
Elements are prominently featured in the " Raiders of the Lost Arcade " segment of " Anthology of Interest II " , an episode of Futurama .
Space Invaders appears in the film Pixels , and a film version of the game is in the works by Warner Bros with Akiva Goldsman produced . On February 13 , 2015 , Daniel Kunka was set to write the script for the film .
Episode 111 of the second series of Lupin the Third features Lupin playing an ' invaders ' game .

= = = = Books = = = =

Various books have been published about Space Invaders , including Space Invaders : An addict ? s guide to battle tactics , big scores and the best machines (1982) by Martin Amis ; Tomb Raiders and Space Invaders : Videogame forms and Contexts , by Geof King and Tanya Krzywinska (2006) , and Space Invaders (1980) by Mark Roeder and Julian Wolanski

= = = = Other = = = =

In 2006 , the game was one of several video game related media selected to represent Japan as part of a project compiled by Japan 's Agency for Cultural Affairs .
In the same year , Space Invaders was included in the London Science Museum 's Game On exhibition meant to showcase the various aspects of video game history , development , and culture .
The game is also a part of the Barbican Centre 's traveling Game On exhibition .
At the Belluard Bollwerk International 2006 festival in Fribourg , Switzerland , Guillaume Reymond created a three @-@ minute video recreation of a game of Space Invaders as part of the " Gameover " project using humans as pixels .
The GH ART exhibit at the 2008 Games Convention in Leipzig , Germany , included an art game ,

Invaders ! , based on Space Invaders 's gameplay . The creator later asked for the game to be removed from the exhibit following criticism of elements based on the September 11 attacks in the United States .

There is a bridge in Cáceres , Spain , projected by engineers Pedro Plasencia and Hadrián Arias whose pavement design is based on this game . The laser cannon , some shoots and several figures can be seen on the deck .

A French street artist , Invader , made a name for himself by creating mosaic artwork of Space Invader aliens around the world .