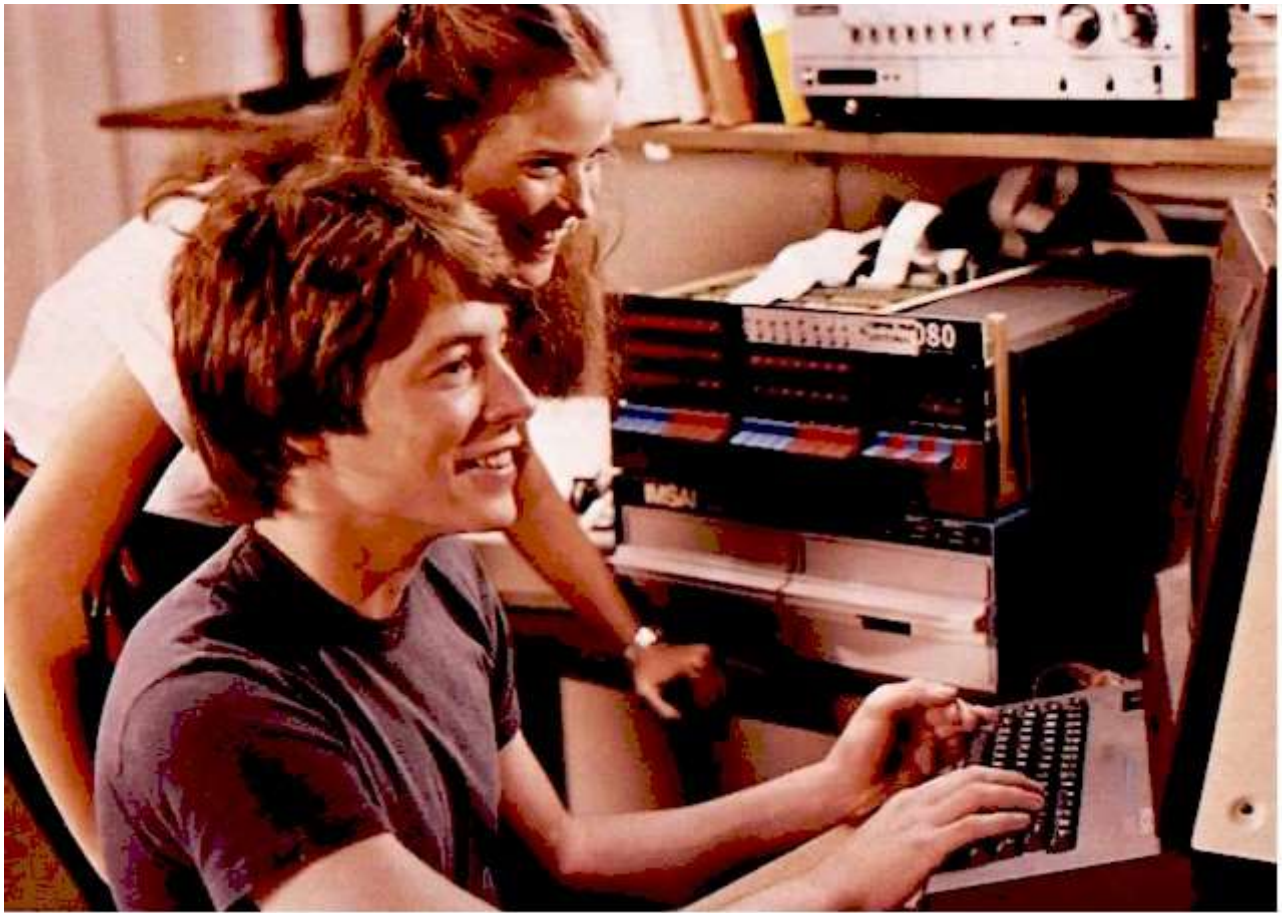# The Official IMSAI Home Page

IMSAI Replacement Parts

The WarGames IMSAI

What ever happened to the IMSAI 8080 used in the 1983 MGM/United Artists movie "Wargames"? Glad you asked. As a matter of fact, a few people have asked me about it over the years. No, it isn't ensconced in a museum or private collector's crypt. Here is the story and yes, it still survives here with us, always just within view![3/4/2006- An e-mail from Special Effects Supervisor Mike Fink...](#)*and...*[... the answer to one of the most asked-about items "What happened to the WOPR?"](#) *and...*

[More about the 2006 W.O.P.R. replica and mystery disappearance!](#)*NOTE: Much, if not most of what you find on the web relating to technical aspects relating to the "WarGames" film has been extracted from the material below, most without credit to the source. I believe that my contributions and support of the film's historical "mechanics" have significantly promoted the ongoing popularity of this uniquely inspirational icon of filmdom's depiction of technical capability and imagination. To those who have materially benefited... "You're welcome!" –trf (2-24-2010)***Fischer-Freitas Company** *came into being with $800 (and a whole lot of faith) in October of 1978, established by my former IMSAI manufacturing Corporation co-worker (and sweetheart)* [Nancy SanSo Freitas](#) *and me. We started*

out in an old warehouse (910–81st. Avenue), next door to *Mothers Cookies* and across the street from *Nabisco* in a seedy south Oakland, California neighborhood. We established the company as an independent service organization for IMSAI computer products, floppy and hard disk repair, terminal, monitor service/sales, and other opportunities in the developing microcomputer market. In 1979, Nancy and I acquired the production rights, necessary fixtures and tooling to continue production of the legendary IMSAI line of computer products, now as a division of Fischer-Freitas Corporation.Our affiliation with "Wargames" began on May 4, 1982 when we received a call from **Linda Fleischer** of *Mandy Films Inc.* requesting literature and color photos of the IMSAI products for consideration as props on a film that was starting production. My Marketing Director **Bob Walker** sent off the requested materials along with a brief letter extolling the virtues of an IMSAI 8080 as a prop, and that we had many other related historical items, magazines, and equipment to sweeten the pot.On July 8,1982 **Bob Walker** briefed me regarding a call from **Cliff McMullen** of Unique Products, a major pioneering product placement company in the Los Angeles area. McMullen is the guy who got the candy/major food group *"Reeses Pieces"* placed in the **Steven Spielberg** movie **"*ET*"**. The firm wanted us to provide them an IMSAI 8080 and several other props for a new MGM Studios movie starring the then-unknown **Matthew Broderick** and **Ally Sheedy**.Being somewhat skeptical, I told McMullen on the phone to send me a copy of the script and I'd get back to him. To my surprise, two days later a package arrived from **Mandy Films** containing other informational items about *Unique Product Placement* and a pre-shooting script of *"Wargames"*, typed and printed onto a photocopy-resistant green paper by a script services company in the west Los Angeles area. This early version of the script had the story line placed in the future and seemed to depend more on fantasy and conjecture rather than technical reality.Our contact person for the film was Special Effects Supervisor **Mike Fink.** Bob Walker, and I would be in regular contact with for him the next three or four months. The production had the backing of MGM/ United Artists and promised to have a major budget to work with. Mike told me that the screenplay writer **Lawrence Lasker** stipulated that an IMSAI 8080 be used as the visual prop for the central character's computer. Still skeptical, I read the script trying to envision the equipment requirements.A few items struck me as lacking credibility. First, the central character (**Matthew Broderick**) would access a military computer (the visually delightful **W.O.P.R.** in

the movie) using his home computer connected to an acoustic coupler and his telephone handset. At that time, acoustic couplers had a maximum communications rate of 300 baud (ridiculously slow then, and now by today's standards).The requirement of an acoustic coupler was mandated more for visual effect than for reality. I resolved the credibility issue by providing the only IMSAI 212A modem ever made (actually, a Cermetek 212A modem that I was evaluating as a possible addition to our product line). By repainting the front panel and carefully applying press-on lettering, I provided a plausible, if unstated high-speed data link (at a blazing 1200 baud!) for the movie's plot. An acoustic coupler was still used to satisfy the visual effect in the movie.Another thing was apparently missing from the initial script. How was this young lad going to load software into his computer? I called **Mike Fink** to discuss this and he admitted that the issue never even came up. I suggested an IMSAI FDC-2 (the dual Calcomp 142 8″ floppies in an enclosure similar to the 8080), and he readily accepted the offer. The loading of one of those 8″ disks (about 1 meg of storage in double density format) is one of the few equipment close-ups that made the final cut of the film.Once we received the script, **Bob Walker** sent a full line catalogue down to Mike for review. Mike had a chance to see what other items might be of use for the film's shooting, and selected one of our IKB-1 Intelligent keyboards as the on-screen input device. Mike acquired an Electrohome 17″ monitor because of it's readability at distance, a camera requirement. We decided to go ahead and provide the requested equipment for nothing more than the promotional value and screen credits. The 8080 supplied has the Fischer-Freitas-era front panel featuring a layered screen-printed Mylar front mask rather than the early acrylic/photo-film sandwich style with its highly reflective and humidity-related cosmetics problems.Our engineer Glen Hoag came up with an idea to hard-wire a RESTART 7 instruction onto an old MPU-A 8080 processor board to provide a somewhat random light activity to the front panel lights, which worked out nicely. The chassis was then loaded with an assortment of junk boards to give the impression that the box was loaded with processing power! Actually, the bus fingers of all those boards were cut off to prevent the possibility of conflicts with the CP-A front panel or MPU-A processor. With flat cables attached to several of the dummy boards, it made for an impressive prop. The visual effect was so convincing that the director decided to leave the cover off during filming.I considered it a cheap shot to find that most of the "IMSAI 8080" labeling was obscured by a prop

instruction label during the movie.But the IMSAI 212A modem gets a great mug shot with the talented **Ally Sheedy** during some critical scenes.

 The IMSAI IKB-1 keyboard is prominently featured in the publicity, poster and video packaging art with an over-the-shoulder shot of **Ally Sheedy** and **Matthew Broderick** at the keyboard watching the video monitor. A few weeks later we were solicited by the film's producer to foot the bill ($5000) for a four-color, two page advertising print for a fictional computer magazine that provides an important plot development point early in the movie. I don't think they realized how small and financially strapped we were at that time; it simply wasn't in our budget. I declined. I believe, after seeing the movie, that my decision proved to be a wise one.Mike, with his cohort in programming, **Steve Grummette**, had written some code to provide the illusion that **Matthew Broderick** was actually entering data and getting output on the monitor. In fact, the IKB-1 keyboard could be programmed with a few keystrokes to output an ASCII sequence whenever any key was subsequently pressed. This feature was employed to generate an interrupt in the off-screen *CompuPro 8086*-based system that Mike had used to develop much of the required output. It is that *CompuPro* that actually controlled the *Electrohome* monitor in the movie, but cued by **Matthew Broderick**'s keystrokes on-camera!However, the plan wasn't without flaw. We had provided several thick binders imprinted with the famous IMSAI logos to be used as additional props, and taped a typewritten programming instruction sequence on the bottom of the IKB-1 keyboard. But apparently that last item was temporarily forgotten at a very inconvenient time! Within a few days of shipping off the equipment, all was set up and apparently working fine. **Matthew Broderick** either observed or was instructed in the 6 keystroke programming sequence of the keyboard, a step necessary in the beginning of each shooting day.I was deeply in love with flying at this time, and was out boring holes in the sky about a week after shipping the *Wargames* props when we received a frantic call from Mandy Films. They had an emergency on the set! I got the messages when I arrived back the office late in the afternoon. It seems that they had forgotten the programming sequence for the keyboard and none of my people had remembered the special keyboard coding. **Matthew Broderick** saved the shoot by eventually recalling the sequence and experimenting with the ESCAPE key, proving his worth as a true hacker!Nancy, Bob, and I were [invited to hand deliver the equipment](https://www.imsai.net/the-wargames-imsai/) to the film studio and observe some of the filming, meet the cast and to get some of the

publicity stills being shot at the time. Sadly, we were not able to take time off since we were meeting with potential investors. The equipment was returned to us as promised at the end of the shooting schedule, but the front panel switch escutcheon on the 8080 suffered some moderate shipping damage, as did the FDC-2. No sweat. The IMSAI 212A modem still sports an odd photo-felt-and-tape pad on its top, possibly left over from the close-up scene when **Ally Sheedy** places a small speaker on top of it.We were requested to send the equipment back down to *Mandy Films* on March 3, 1983 for a publicity photo shoot in preparation for the film's opening release. A notation on our packing invoice reads *"Expected return date: 3/9/83"*. The IMSAI 8080, FDC2-2 Dual Floppies, IKB-1 keyboard, two cables, and a Zenith 12″ video monitor were again sent back down to *Mandy Films* on March 5, 1983 for a publicity photo shoot in preparation for the film's release.We sent our copy of the script back to the script service as requested. [We still have the shipping labels and letters from the promotional placement firm and Mandy Films](), as well as the 8080, keyboard, and modem. Additionally, we received a complimentary movie poster. We scrapped the FDC-2 shortly after getting it back because of shipping damage and questionable value. It was not deemed suitable as a "keeper".*Credits in the film's end include:*bullet**Compupro Division– Godbout Electronics**bullet**Dataproducts Corporation**bullet**Diablo Systems**bullet**Electrohome Ltd.**bullet**Fischer-Freitas Corporation**bullet**George Risk Industries**bullet**Integrand**bullet**International Technical Associates, Inc.**bullet**Memorex Corp.**bullet**N.L.B. Industries**bullet**Qume**bullet**Rixton, Ltd.**bullet**SOCS Management**bullet**Showtime Video Ventures**bullet**Televideo Systems Inc.**[RELATED ITEMS:]()*This e-mail was received from Rob Wilcox (one of the crew) in June of 2000…*"It is funny what you will find when your searching for a 8085 emulator for an ancient telecom rework. I was the effects foreman on War Games. I worked for Mike Fink, overseeing the video distribution to all the monitors on the crystal palace consoles driven by a number of STB video cards in 2 Compupro S100 computers. I bought an IMSAI S100 during the show for the cool looks but never used it for anything much. Unfortunately, it is long gone. You will find me in the credits after Mike and Linda."   — Robert Wilcox *and….*"Hi Thomas:

I think it is great, when a vendor has received good value from when Hollywood

comes hustling. It doesn't usually work out that way! War Games was a film that I enjoyed working on. I landed that job after completing Raise The Titanic, Blade Runner, (where I met Mike) and Brainstorm previously. Subsequently, I have been doing visual and special effects for Boss Films, Dream Quest, ILM and finally my own company WKR Productions. Although I started life as a EE, I never regretted working in the film business during the last 22 years. Unfortunately, the business in Southern Cal. is dead! :<(I just closed WKR Productions and now I am working as a software contractor for Harris Corp. Oh Well, Telecom is the high profile industry now. Ha!

I don't have anything left from War Games except for the hideous crew jacket. It has been a while but I would be glad to try to help with questions. The last time I met with Mike was a few years ago when he was director of visual effects for Warner Bros. I am sure he is still busy, he would be willing to work in Canada. — Robert Wilcox*Director John Badham offered this insight into the film's evolution: (http://www.engadget.com/2004/10/23/movie-gadget-friday-the-w-o-p-r-from-wargames/)11. As the Director of the film, I have my pawprints all over the script. One of these prints is the name "WOPR". The original (and correct) name is SIOP for Single Integrated Operating Plan. This was truly boring and told you nothing. A good acronym should bear some mneumonic relation to what it stands for. For example in the Army Rifle Training Program they teach the acronym BRASS. This stands for Breathe, Relax, Aim, Squeeze,Shoot.*
*Since the purpose of the computer was to deliver a knockout blow if needed to the enemy, the word "whop" as in hit or strike popped into my head. And I then adapted the word to stand for War Operation Plan Response. Of course I saw the resemblance to the Burger King product, but they would have had nothing to do with some warmongering device and would not have wanted to have any connection with the film.*Posted at [7:36PM](#) on Oct 24th 2004 by [John Badham](#)*In late October of 2004 my attention was directed to a claim from a seemingly desperate David Sosna who stated that the IMSAI 8080 used in the Wargames film was his: 13. I designed the computer systems on the movie, unfortunately leaving for another film before I got to meet John Badham, the director. Later we worked together as Director and 1st Assistant Director, my day job, and became friends. As M Evans noted, there is a distinct similarity to what IBM called its "EAM Equipment" for electronic adding machine. The picture went to MGM after Universal refused to make it in more than 45 days. MGM had an incredibly*

antiquated computer system that had actual, running, EAM equipment for crew payroll. I took the Art Director into the computer room, raised floor, air conditioning, etc., and showed him a card sorter and an alphanumeric interpeter. This was a machine that read a punch card and printed human readable text across the top row. When the card deck was finished, it was taken to another machine for further processing. What seems like a joke today was the reality of the time. The art director took the rounded corners, grey crinkle finish and used it to create the fictional wopr. Allan Kay, one of the four Apple Fellows of Apple computer, commented that it was impressively accurate for the style of machine that the military would have had when the movie was released in the early 80's. As a sidebar, off wopr topic, we used an atari 800 in preproduction. It had four oscillators and we actually could create the DTMF tones required to dial every number in an area code/prefix and attempt to communicate with a modem. We took that detail out so that people wouldn't try to do that at home. Also, that IMSAI 8080 was mine. And the incredibly geeky looking acoustic coupler was my friend's, Steve Grumette. He and I designed the methodolgoy for the maps on the monitors in the crystal palace, using Solid State Music video boards running on 2 Godbout S-100 computers. Steve reprogrammed a character generating ROM with map sections instead of letter shapes to produce maps on the small screens. the large screens were rear screen projectors with images programmed on HP 3000 Color Basic. It took about 5 minutes to generate a single frame! The studio assured us it could not be done. Glad you liked the movie, but it's John's film. I just helped geek it up. One of the writer's, Walter Parkes, is now a Very Big Deal at Dreamworks and has been for some time.Posted at [8:54PM](#) on Oct 26th 2004 by David Sosna 0 starsOf course, I couldn't resist the urge to correct this egregious error by responding to his post on http://www.engadget.com/2004/10/23/movie-gadget-friday-the-w-o-p-r-from-wargames/: 14. Mr. Sosna certainly makes a broad stroke of claims that almost sound believable. However, he states "Also, that IMSAI 8080 was mine. And the incredibly geeky looking acoustic coupler was my friend's".

Not so, Mr. Sosna! That IMSAI 8080 with it's unique assemblage of boards, the IMSAI (faux)212A MODEM, IMSAI IKB keyboard, and all supporting provenance are still here with us at Fischer-Freitas. We have proudly exhibited the equipment several times at the Vintage Computing Festival and other venues over the years, and still receive several or more inquiries a week from around the world. I have been offered a very princely sum for it, but retain a proud attachment for its unique place in movie

propdom. My current depth of the film's technical details and participation are found on our web site at http://www.imsai.net/movies/wargames.htm

My technical contact for the Wargames movie was Mike Fink, whose movie credits span several decades and an amazing number of special effects roles. His film contributions include films like "X-Men", "Mars Attacks", "Batman Returns", and many more. A Google search for his name and Wargames will bring up citation of an amazing career.

A more credible crew anectdote came several years ago in an e-mail sent, commenting on the "Wargames IMSAI" web site:

"I was the effects foreman on War Games. I worked for Mike Fink, overseeing the video distribution to all the monitors on the crystal palace consoles driven by a number of STB video cards in 2 Compupro S100 computers. You will find me in the [film]credits after Mike and Linda [Fleisher]." — Robert Wilcox"

Please, Mr. Sosna… limit your claims to reality.

–Thomas "Todd" Fischer
Fischer–Freitas Company Posted at [10:57AM](#) on Oct 29th 2004 by [Thomas "Todd" Fischer (Fischer–Freitas Company)](#) 0 stars***This seemed to light Mr. Sosna's obviously short fuse, as witnessed in his equally desperate attempt to contain the damage:*** *15. Well, What a pleasant surprise to be called a liar by a guy who wasn't on the movie. In fact, it's exactly so, Mr. Fischer.*

I used my IMSAI, which I purchased from you. I believe I spoke with you but I can't recall. The facts as I outlined them were the facts. Mr. Fink was not the computer systems designer when I started the picture. But it was a very political situation, something I would have happily left out of my fond memories but now seem forced to describe.

Mike came in because the producer didn't like the fact that a studio executive had hired me and that I had gotten along so well with the director at the time. She, the producer, was extremely unknowledgeable about computers and was very open to be solicited, politically, but various crew people (one of whom later turned out to be a thief and was

fired by the producer who took over when caught in a significant lie).

Basically, she resented my relationship with the director we started with, not John Badham who came in after I left and directed the film that everyone remembers to fine effect. She also hated the fact that I had a better financial deal than she had.

So she fired me, rehired me and I quit to get away from her after most of my work was done. Mike got in with her and ended up finishing the picture. Everything I said was true. It's possible that the IMSAI that I brought in to show the director didn't end up as the final machine. I was gone by then. But I no longer have that machine, so if it wasn't the one in the picture then someone, perhaps you have it or it disappeared. I don't really care. It isn't as important to me as it seems to be to you. Regarding the acoustic coupler, my recollection is that my friend Steve Grumette, owned it and ran the computers on the set. He also developed a great deal of the technology we used on the show, including syncing with a panavision camera, the process projectors and the floor screens.

All the other facts were exactly as I stated them. I have no interest in lying about something that happened 20 some years ago on a message board. I saw John's post and added one of my own. You did not provide the acoustic coupler. My recollection is that it was a silly old piece of hardware that Steve picked up for small money somewhere because he always liked a good deal.

And while Mike went on to make a formidable career in visual effects, I went in a different direction making an equally formidable career for myself elsewhere. You may look me up on IMDB, after you calm down and stop asserting that I lied about my contributions. I was there. You were not. You were one of many vendors. I was there from the beginning, broke down the show, worked with Grumette on developing much of the technology. We started with Atari, but their coin op division was getting hammered by parents of kids playing hooky to go to arcades. We didn't want to use an altair because it wasn't colorful enough. So I offered my IMSAI box. But for the IMSAI, for which I don't really care if it was mine or not, everything I said was true. And if that wasn't true, it's an error of memory, not mischief.

I'm sure that mike had many guys working for him, but Steve grumette pulled the cable under the floor of the stage at MGM and I made the arrangements with MGM labor

relations because there was no union position for the job at the time. No one had ever done it before. So this person, who I'm sure got a credit, just like mike, oversaw the video distribution that we installed and that Steve ran while I was in Florida doing "Jaws 3D." It's so long ago that I can't remember if Godbout used the name compupro or not. But they were machines that Steve and I got from Godbout and got the boards for and modified the refresh rate to 24 FPS. Steve and I and another engineer worked with a panavision camera, in Steve's living room, and an oscilliscope to determine which of the accessory pins strobed on a new frame. We built a box to shift the phase of the video boards to match that strobe which was driven by the process projectors. Mike wasn't even on the picture at the time.

Frankly I find it rather pathetic that you choose to make such a big issue out of a simple rememberance of things past. Your assertions to the contrary seem overarching and hostile. I don't know what it is that you think you are protecting. Perhaps your connection with the picture is all you have left in your life that has any meaning. I feel sorry for you, but for the fact that you're calling me a liar.

After 30 some years in the picture business, you're the first person who's ever questioned my integrity. And you choose to do so from quite a distance.

Please, Mr. Fischer, limit your claims to what you know about, to situations where you were present and to the facts that exist, not just the tiny portion that you know about. And the next time you choose to call me a liar in a public forum, in writing, I'd be happy to introduce you to my lawyer.

David Sosna
Computer Systems Designer
"War Games"
Posted at 2:43AM on Oct 30th 2004 by David Sosna *3-23-2006- In the spirit of fairness, I have given Mr. Sosna's reply full publication.   However, his attribution of my calling him a liar is totally unfounded as all I really objected to in his first post was his claim that the "WarGames IMSAI" was his. Although it may have influenced thinking in the "relief" crew, the original solicitation for props to us as Fischer-Freitas came from the office of Linda Fleischer and Unique Products, AFTER Mr. Sosna's services were no longer needed. I have no doubt that Mr. Sosna has contributed to the*

world of visual media entertainment, and that he was one of the many individuals who participated in the first efforts to get the "WarGames" script into production. In that same line of thought, I would imagine that Mr. Sosna's account of the back story of the first "WarGames" efforts would provide an interesting read. But the fact remains that the end product deleted many, if not most, acknowledgements of those initial efforts when the final cut was printed and released, including his.For anyone to claim any part of the IMSAI contribution to the release version of the "WarGames" film detracts from my contribution as well the value of the original items that I possess and have defended for the all of these years. This value has been most recently been realized in five figures when I was asked to provide these items for a commercial shoot for an AT&T commercial that also features "Robby the Robot" (from the film "Forbidden Planet"), and K.I.T. the intelligent talking Pontiac Trans Am from the "Knightrider" television series. It will be one of the three stars in an upcoming commercial for AT&T.If Mr. Sosna demands an apology, it can only be for the misunderstanding and defensive response that I took after an aggressive and unfounded claim of defamation... totally wrong and not in keeping with my nature to give credit where credit is due, and I submit my apologies to Mr. Sosna and all concerned in that sense. –Thomas "Todd" Fischer

Bill Westenhofer, Michael Fink, Trevor Wood, Ben Morris, receiving their Oscar for their work on

"*The Golden Compass*" (February 22, 2008)**Academy Award Oscar winners for "Best visual effects"**

* *The Golden Compass* (New Line in association with Ingenious Film Partners) Michael Fink, Bill Westenhofer, Ben Morris and Trevor Wood

"Gir", Mike Fink, Thomas "Todd" Fischer (August 08, 2008)**On March 4, 2006 I received the following e-mail from Wargames' Special Effects Supervisor Mike Fink who gives this account of early to mid-production management turnover:***Hi Folks –*

Just wanted to thank you all (especially "Todd" Fischer) for the nice mention that I read when a friend forwarded the string about WarGames on Engadget for their Movie Magic Friday piece. I then went to your website and read the story how you were involved. This string looks so old, it may be that Engadget isn't even around any more. I haven't checked.

Anyway, it was a shock to read Sosna's account and a pleasure to see your answer. I'm still asked about that computer when I do talks at film and computer graphics schools (yes, now I'm old enough to be asked to talk to people not much younger than I was when we made WarGames).

As a bit of catch-up, Sosna's friend Steve Grummette was a huge help in making the film, and spent many hours programming just about everything that was on a computer monitor. Bob Wilcox remains a friend still, although we see each other rarely since he opted out of the film business (good for him). I do occasionally see John

Badham and Walter Parkes, but have not seen Sosna since he left WarGames. Not to be catty, but I had to dismantle all the infrastructure to make the film that Sosna built, because it flat did not work. Of course, the big technical achievement for the film was the 50,000 or so feet of negative we managed to make into over 100,000 feet of print for the big screens in the front of the set. It was a huge undertaking, especially for the time (we built our own film recorders and file management system to control it all). The crew making those "plates" worked in shifts 24 hours a day for 7 months, if I remember correctly. Oh, and the Hewlett Packard computers we used were H-P 9845c's I believe. They were lent to us by H-P because we were lucky enough to have Colin Cantwell, who had a relationship with H-P and was a consultant to them, as the lead designer of the missile scenarios displayed on those big screens. Colin did an incredible job and it is because of him that I looked so good.

Currently I'm in London working on a film called "The Golden Compass". A huge project on the order of Lord of the Rings and Harry Potter combined.

Anyway, thank's for the nice mention and your excellent memory.

My best,

Mike

*Film credits attributed to Mike fink as listed at the Internet Movie Data Base (http://www.imdb.com include:*Filmography:Visual Effects:bullet2000sbullet 1990sbullet1980sbullet1970sTropic Thunder (2008) (visual effects supervisor) (as Michael Fink)The Golden Compass (2007) (senior visual effects supervisor) (as Michael Fink)Constantine (2005) (visual effects supervisor) (as Michael Fink)

... aka Constantine (Germany)X2 (2003) (visual effects supervisor) (as Michael Fink)

... aka X-Men 2 (Singapore: English title) (USA: working title)

... aka X-2 (USA: poster title)

... aka X-Men 2: X-Men United (USA: promotional title)

... aka X2: X-Men United (USA: promotional title)

... aka X2: X-Men unis (Canada: French title)Moonlight Mile (2002) (visual effects

supervisor) (as Michael Fink)Road to Perdition (2002) (visual effects supervisor: second unit) (as Michael Fink)Clockstoppers (2002) (visual effects supervisor)The Mothman Prophecies (2002) (visual effects consultant: Cinesite) (as Michael Fink)Vanilla Sky (2001) (visual effects supervisor: Cinesite) (as Mike Fink)Thir13en Ghosts (2001) (visual effects supervisor) (as Michael Fink)

… aka 13 fantômes (Canada: French title)X-Men (2000) (visual effects supervisor)

… aka X-Men 1.5 (USA: DVD box title)

Lethal Weapon 4 (1998) (visual effects supervisor) (as Michael Fink)

… aka Lethal 4 (USA: promotional abbreviation)Contact (1997) (senior visual effects supervisor: Warner Digital) (as Michael Fink)Mars Attacks! (1996) (visual effects supervisor) (as Michael Fink)Eraser (1996) (visual effects supervisor: Warner Digital Studios) (as Michael Fink)Braveheart (1995) (visual effects supervisor) (as Michael Fink)Baby's Day Out (1994) (visual effects supervisor)Batman Returns (1992) (visual effects supervisor) (as Michael Fink)Harley Davidson and the Marlboro Man (1991) (visual effects supervisor) (as Michael Fink)RoboCop 2 (1990) (optical wrangler) (as Michael Fink)The Hunt for Red October (1990) (visual effects consultant: Boss Film Corporation) (as Michael Fink)

Tango & Cash (1989) (visual effects supervisor) (as Michael Fink)The Blob (1988) (visual effects production supervisor) (as Michael Fink)The Seventh Sign (1988) (visual effects supervisor)Project X (1987) (visual effects supervisor) (as Michael Fink)My Science Project (1985) (special lighting effects consultant) (as Michael Fink)D.A.R.Y.L. (1985) (visual effects supervisor) (as Michael Fink)The Adventures of Buckaroo Banzai Across the 8th Dimension (1984) (special visual effects supervisor) (as Michael Fink)

… aka The Adventures of Buckaroo Banzai (USA: short title)

… aka The Adventures of Buckaroo Banzai Across the Eighth Dimension (USA: DVD title)WarGames (1983) (visual effects supervisor)

Star Trek: The Motion Picture (1979) (effects props and miniatures) (as Mike Fink)

… aka Star Trek: The Motion Picture – The Director's Edition (USA: DVD title)The China Syndrome (1979) (electronic consultant) (as Mike Fink)

Second Unit Director or Assistant Director: bullet 2000s bullet 1980sThe Golden Compass (2007) (second unit director) (as Michael Fink)Superman Returns (2006) (second unit director: baseball unit, Los Angeles) (as Michael Fink)

… aka Superman Returns: An IMAX 3D Experience (USA: IMAX version)Constantine (2005) (second unit director) (as Michael Fink)

… aka Constantine (Germany)

The Seventh Sign (1988) (second unit director) (as Michael Fink)

Art Department:Blade Runner (1982) (action property supervisor) (as Mike Fink)

… aka Blade Runner: The Final Cut (International: English title: recut version)

Thanks: bullet 2000s bullet 1980sShadows of the Bat: The Cinematic Saga of the Dark Knight – Dark Side of the Knight (2005) (V) (special thanks) (as Michael Fink)

One from the Heart (1982) (with the participation of) (as Michael Fink)

Self:The 80th Annual Academy Awards (2008) (TV) …. Himself – Winner: Best Visual EffectsBatman: The Motion Picture Anthology 1989-1997 – Assembling the Arctic Army (2005) (V) (as Michael Fink) …. HimselfFX2: Visual Effects (2003) (V) (as Michael Fink) …. HimselfDay by Day: A Director's Journey Part I (2003) (V) …. Himself

… aka Day by Day: A Director's Journey – The Road In (USA: DVD title)The Visual Effects of X-Men (2003) (V) …. HimselfX-Men Production Scrapbook (2003) (V) …. HimselfThir13en Ghosts Revealed (2002) (V) (as Michael Fink*One of the most asked-about and commented subjects relating to this film is the "WOPR" computer, (my personal choice of Best Supporting Role for a Mechanical Device). I posed the question to Mike Fink… he graciously supplied the details as follows:*On Mar 5, 2006, at 7:29 AM, Thomas "Todd" Fischer wrote:

Hello again, Mike–

After receiving your joyous e-mail yesterday, my mind filled with many questions related to the "Wargames" production, many posed by readers of my homage to the film. I'm sure you must tire of such queries so I won't impose upon you with a list.

However, one of the most asked-about items (on my site as well as many others) has to do with the W.O.P.R. as depicted in the film. It is certainly a prop, and bears no small resemblance to the IBM Unit Record equipment of the 1950's and '60's (I worked on such equipment as a Customer Service Engineer for IBM in the mid-'60's). British archeologist Christine Finn's 2000 book "Artifacts: An archaeologist's year in Silicon Valley" credits the origin thusly:

"The film's "tactical computer" WOPPER was made not in the Valley, but at a film studio at Borehamwood, England."

Do you have any insight as to the validity of Christine's citation? I have believed that as a Brit, she might have been privy to a bit of trivia not widely publicized.

Best regards,

-Thomas "Todd" Fischer
Hi Thomas "Todd" (so should I say Thomas or "Todd" when writing?) –

Well, the production designer on WarGames, a fellow named Geoffrey Kirkland (who was not credited as Production Designer but as "Visual Consultant" because he came over from the U.K. and did not have a Art Directors' Guild card), designed the WOPR [War Operations Plan Response] – John Badham invented the name), based on some pictures he had of early "tabulating" machines of the 40's or 50's, and metal furniture, consoles, and cabinets used particularly in the U.S. military in the 40's and 50's. They were adapted in drawings and concepts by Angelo Graham, the Art Director. The original name in the script was SIOP, which is written about correctly in your WarGames homage. Since Jeffrey was English, he may have been influenced by some designs he had seen there. I was some help, since my first programming job was on a General Electric 225 (I think that was the number), debugging an early payroll program (written in Fortran) for San Fernando Valley State College, now Cal State Northridge. We had an old IBM card sorter, etc., so I was somewhat familiar with the hardware, but like you, I don't remember any of this hardware looking like WOPR. I do remember WOPR looking a lot like the very old metal furniture we had in the Army in the 60's.

The cabinet was built of wood – essentially 1/8″ thin sheets of what we called Luan plywood on a frame of 1X3 pine – by the construction crew run by Bob Scaife at MGM. The wood was painted "as metal", and given the hammertone finish in the final paint process. After the basic construction was done, but before final paint, my crew installed all the lights and circuitry to make the lights blink (a fellow named Mick Baron did that). I think you can detect the pattern of an early LED stereo equalizer display in there – built up from a piece of stereo hardware I picked up somewhere.

The flat panel display (the early flourescent type) that carried the countdown information was the only existing prototype of a display developed by a fellow I knew in Sunnyvale who I met through Paul Lovoi, then of InTA (International Technical Associates, formerly of ILC), who built the giant strobe system we used for the end sequence. Paul was, and is, one of the most brilliant people I have ever met – he's still in Sunnyvale and still inventing very cool stuff. I have drawn a blank on the display fellow's name, but he was a well known inventor in Silicon Valley in the 80's, and had quite a few patents to his name (Nolan…? Damn, why can't I remember that? I may have to call Paul). Anyway, I hand carried the display on my lap from Sunnyvale to MGM, where I personally installed the display in the WOPR and then connected it to an Apple II with a prototype driver card for displaying characters on the screen.

While filming the machine, I sat huddled inside with the Apple in my lap and typed commands into it per instructions from John Badham as the camera rolled. Very high tech. The display is only seen in insert because it had not yet been installed when we shot the live action around WOPR. I remember that the driver card was not built to run at 48hz, which we needed to maintain sync with the 24 frame per second camera, so I, with the help of a fellow named Larry Barton, changed out the crystal on the board, and then trimmed it by rubbing it with a lead pencil until the scope showed us 48hz. Fun.

So, no, the WOPR was not built in Borehamwood, England, but in Culver City, California, by members of the International Association of Theatrical and Stage Employees Local 44. I have no idea where Christine Finn got her information, especially since her spelling of WOPR (so prominent on the screen) is so bogus. No part of the film
and no props were made in the U.K. I'm afraid the quote is false. Sorry, it sounds like a good story.

Happy to help with this anytime. Boy, those were the days. All those 1's and 0's moved pretty slowly, and you could do just about anything with a wire wrap tool, a soldering iron, and a 10Mhz scope. Sheesh! Which reminds me of a bit of trivia: John wanted sparks to come out of the "control panels" that were installed in the outer walls of the set as WOPR nearly started WW3. I mentioned to John that this was highly unlikely, and very nearly impossible – maybe he should not do this. But, he was adamant. So, we connected 110VAC to the positive and negative pins of some IC's, and showed John what that looked like. He thought that was great, and that is what made the sparks in those panels near the end of the big missile sequence.

Stay well,

*Mike***And what finally happened to this wonderful prop?...MIKE FINK–** *Well, the WOPR was broken up for scrap and I retrieved some of the electronics. There really wasn't much to it. The display went back to the fellow who built it (see below). To correct Sellam [Ismail], it was not a backlit liquid crystal display, it was a flourescent matrix, similar to a lot of segmented alphanumeric displays at the time. It was essentially a large flat glass envelope with some sort of noble gas and some sort of anode/cathode arrangement/addressing scheme that made individual dots glow. (Damn! That's it! The guy who designed and built that display was Lowell Noble! He died a few years back, but he was another great guy. If I remember correctly, I think that one of Lowell's contributions to life on Earth was as a member of the team that designed the tritium trigger that made fusion bombs possible. Always hard to square with my experience of him.) Lowell did do some experimenting with LCD's for color displays in the mid 80's, and developed a full color laser projector that was the first I had ever seen (also mid-80's). In fact, I didn't see anything to equal it until the late 90's.*

A new DVD digital release of Wargames? *Yep! You read it here. I was just contacted about possibly providing the original 1983 WarGames film props to be used for a special edition DVD of the film WARGAMES for Fox Home Entertainment. I thought the Director's Cut DVD would be the pinnacle of promotion for this 24-year old classic, but the wizards of Hollywood have devised something even greater! We'll have to wait a bit to see what comes of this, but if history is any kind of soothsayer, I'd bet a burger 'n beer that it'll be worth watching!*

 A [commercial for AT&T's "Voices"](#) *campaign was launched in March, 2006, filmed in one of Howard Hughes' immense airplane assembly hangars located on the grounds of* **Playa Vista Studios** *(near the Los Angeles International Airport), where some of the most memorable technical props in modern film history were assembled for a major*

commercial shoot.

I provided the original

"WarGames IMSAI" (and related props), which is featured in a starring role along with "Robby the Robot" from "Forbidden Planet", "Rosie the Robot" (from television's "The Jetsons") (uh... that's me on the left!)

and "K.I.T.T." the intelligent

talking Pontiac from the "Knight Rider" television series in AT&T's new commercial campaign. More photos and story coming up as soon! The commercial clip can be found on YouTube [here](#).As an aside, I was absolutely captivated by the original film release of "Forbidden Planet" in 1956 and never imagined in my wildest dreams that I might someday share Robby's space in place of the lovely Anne Francis, as shown in the following image:[Forbidden Planet](#) (1956) – [Anne Francis](#)PLUS! ...... the answer to one of the most asked-about items

 *[What happened to the WOPR?](#)3/18/2006 NOTE- A reproduction of the original 1983 WOPR prop has been made and is featured with the "**WarGames IMSAI**", "**Robbie the Robot**", "**Rosie the Robot**" (from television's "The Jetsons"), and "**K.I.T.T.**" in an **AT&T** commercial that was filmed in Los Angeles.*

more related items...Another

"WarGames" Treasure!Two years ago I was astounded and immensely grateful to come into possession of one of the two CompuPro 8/16 computers used in the backstage control of the set of "WarGames" as described above. I only became aware of the heritage this unique machine when the donor casually mentioned it to me during our discussion of IMSAI history. More details about this priceless addition to the "WarGames IMSAI" collection will be added as time permits.

An *IMSAI 8080* was originally to have had a "walk-on" part in **Turner Network Television's "***Pirates of Silicon Valley***",** a Hollywood version of **Steve Jobs** and **Bill Gates** from their hacking days to the distant present. Supposedly based on **Paul Freiberger** and **Michael Swaine's** *1999* updated book *"Fire in the Valley"*, the movie does not even begin to resemble the original 1984 publication. Instead, it depicts **Steve Wozniak** (**Apple Computer**'s co-founder along with **Jobs**) as a kind of rummy, happy-go-lucky hardware hack, **Jobs** as a brilliant, but psychotic opportunist, and **Gates** as the clever manipulator of all he surveys. In short, it didn't really do justice to any of it's principal characters. The movie does present a well-produced fiction that is engaging and entertaining despite its limited scope. Just don't take any of the story as factual. Oh... and the **IMSAI 8080**? Apparently just another "Face on the Cutting Room Floor".**[Footnote:](#)** *The Wargames DVD Director's Cut version commentary track has Mr. Lasker suggesting he specified a Radio Shack TRS-80 for the slot filled by our IMSAI 8080. Time, or a changing of the guard with film personnel in the early stages of production may have eroded Mr. Lasker's memory. Otherwise, our IMSAI 8080 suffered a most fortunate mis-casting!*This oversight seems to have promoted further fallacy,

witnessed by this offering of a supposedly "official MGM" tee shirt on eBay in

September 2002:

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