The Mudoc Corporation

The E x p a n s i v e Swimming Pool

The Mudoc Corporation is producing a novel that spans the next two decades. The novel, *The Metafarm,* depicts the kind of residence/workplaces that will become more and more commonplace as we move further into the communications age and into the era of fuel independence. Since the beginning of the industrial age, human society has shown a growing trend toward urbanization. *The Metafarm* describes the reversal of that trend. As the novel progresses, increasingly larger numbers of people move from urban to rural areas to live and work on many different kinds of metafarms – as described in the chapter summaries of *The Metafarm* production and marketing plan.

One of the principal nonhuman characters in *The Metafarm* is the metafarmhouse, which is described in "The Home of Tomorrow: The Good-Health Home" – one of the Web pages at mudoc.com. An integral element of each of the novel's metafarmhouses is a special kind of swimming pool, an "expansive pool" (see "Tomorrow's Home Pool" at mudoc.com). Expansive pools are small indoor pools that can function like Olympic-size lap pools through the use of "pool expanders." Pool expanders are described in the seven pages that follow and are illustrated in the two Web pages cited above. Because of their size, their design, and other limitations, most present-day backyard pools and above ground pools are not well-suited as exercise facilities. But, with pool expanders and other special accessories, most small pools can be turned into superb fitness facilities that can be used by anyone – and used safely with little or no assistance from others.

The Mudoc Corporation hopes to make *The Metafarm* the decade's most widely exposed literary work. It will be the first novel written and published as a MuBook, a new kind of print-on-paper book – a book with its text presented in the mu typography. It will also be the first novel produced and published as a MuvieBook, a new kind of electronic book that provides readers with a powerful new linguistic tool, *interactive movable type*. The novel will be published in many different languages and produced in a variety of other media, as discussed in *The Metafarm* production and marketing plan.

If *The Metafarm* does become a major literary work, is produced as a television or movie series, and is translated into many languages, it could be read and/or seen by millions of people – possibly hundreds of millions. The wide distribution of the work could provide expansive pools with more exposure than would be possible through any amount of paid advertising. The expansive pool's exposure in *The Metafarm's* different forms may lead to marked increases in the construction and use of swim spas and related swimming and fitness facilities – particularly in rural areas and in colder climates.

The Mudoc Corporation hopes to see expansive pools on the market before *The Metafarm* is published a year or two from now.

On the pages that follow are descriptions of the kinds of expansive pools that will be seen – from the low-cost, low-tech, bare-bones pool to the ultimate high-tech swim spa suited for presidents, kings, and professional athletes, expansive pools that range in cost from less than $2,000 to multiuser swim spas that exceed $200,000.

The Expansive Pool's Elements, Optional Accessories, and Commercial Possibilities

1. **The Vessels**. Expansive pools may be vessels that are designed and built to function as expansive pools – or, they may be other kinds of pools that, through the addition of pool expanders, have been converted to expansive pools. Those pools built as single swimmer expansive pools will usually be about 8 feet by 16 feet. Multi-user expansive pools will be proportionately larger, depending on the number of swimmers who might be using it at the same time. Pools built as expansive pools will usually be housed indoors or enclosed in special structures, such as the "quadridomes" that are described and illustrated later in this paper. For new expansive pools, especially those to be installed in remote locations, new construction, fabrication, or prefabrication methods may be used or developed.
2. **The Pool Expander**. The pool expander, the expansive pool's support and suspension system, will consist of the following elements:
    a. **The O-ring belt and harness**. The O-ring belt is a specially-designed belt-in-a-belt that permits the swimmer to turn freely to side, back, or front – and to easily change from one stroke to another. The O-ring belt is attached to the swimmer's harness with Velcro. The O-ring belt will vary only in waist sizes. The harnesses will vary greatly because each will be tailored to satisfy the particular needs and physical attributes of the swimmers, swimmers that will range from healthy able-bodied adults to infants to quadriplegics to aged individuals with limited mobility. To use a pool expander the swimmer (or helper) attaches the support line to the O-ring belt's line loop and then starts swimming toward the computer display at the end of the pool. (See sketch in *The Metafarm* plan's Appendix A, which is attached.)
    b. **The crane and support line assembly**. The pool's crane and line assembly is the element of the expansive pool that permits the user to swim freely without ever reaching the end of the pool. The flexibility that is built into the crane and into the line makes the user's simulated swim seem normal and natural – a quieter and more natural swim than can be achieved by swimming upstream against the flow of an artificially created current. The swimmer is not conscious of the fact that the energy expended and the forward movement that occurs with each stroke is countered by an equal and opposite pullback force provided by the crane and line.

    There will be two kinds of crane/line assemblies, active and passive. The passive system will consist of a simple flexible boom crane and stretchable line that performs the functions described above. Both the passive and the active systems can be equipped with measuring devices that collect various kinds of data about the swimmer's performance in the pool (e.g., time, speed, distance of swim with each kind of stroke used; energy expended and calories burned; comparisons with previous swims, etc.). The active systems will be motorized and will employ either boom cranes or small-scale rolling overhead cranes that (1) can place the user in the pool, (2) can provide the swimmer with complete

support and safety while in the pool, and (3) can extract the swimmer from the pool whenever desired or needed. When active cranes are employed, the swimmers' efforts will be monitored and supported by the pool computer. With such support, the swimmer will be provided with emergency assistance whenever it is needed or requested.

c. **The anchor and energy collector**. The expansive pool with a passive crane/line assembly will have a simple anchor seated in a concrete post in the ground or attached to the pool's frame or to the platform on which the pool rests. The anchors at pools with active crane/line assemblies will be more complex. Swimmers, particularly the more powerful ones, will exert a good deal of force on the crane as they swim or use the pool expander to exercise. That force will be captured and used to turn a generator attached to the crane. The current from the generator will be used to feed the home's power grid or charge batteries that support the pool system. So, instead of consuming electrical power to provide an artificial current against which the user swims, as conventional swim spas do, the pool expander will produce power that can be used for lighting or for electrolyzing water to produce the hydrogen and oxygen used in the pool's hydrogen heater (see #7 below). In addition, the baffles that separate the swim area from the hydrotherapy area can also collect energy from the swimmer's wash to generate additional electricity.

3. The Pool Computer. The fully equipped expansive pool will be computer controlled. The computer system might be a simple one that uses a TV set as the monitor, a personal computer with its own monitor, or a computer and display designed specifically for use with pool expanders. The computer will monitor each swim, compiling data such as length, duration, and speed of swim; energy expended; strokes used, etc. In monitoring the swim, the computer will also determine that the swimmer is within the safety parameters that have been established for the swimmer and, if necessary, will sound an alarm and extract the swimmer from the pool (see #6 below). The computer will provide instructions (both written and spoken) to the swimmer – those directions the swimmer or the trainer wants to be presented at specified times during the swim. Those computers with speech-recognition capabilities, or other input devices that can be used by the swimmer, will be able to process instructions from the swimmer to control the other elements (described below) in the expansive pool system or elsewhere in the home. Swimming in a computerized expansive pool will be much like riding with Kitt, the intelligent car in the 1980's TV series, Knight Rider.

4. **The Hydrotherapy Section**. One end of the pool will be the hydrotherapy area. Hinged baffles will separate the swimming area from the hydrotherapy area (see the attached sketches). When the swimming area is in use, the baffles will usually be extended to protect the occupants in the hydrotherapy area from the swimmer's wash and to capture the wash's energy to contribute electrical power to the household. The primary fixture in the hydrotherapy section will be an elevatable, tiltable, and retractable massage/exercise table. Between the end of the pool and the table will be three raisable/lowerable fold-up seats. When seated, those in the seats will face and be able to see the pool's display screen at the other end of the pool. (See sketch of expansive pool layout in appendices.)

a. **The massage table and tools**. The massage table will rest on two supports that can be raised and lowered. One end of the table will rest on a hinged support. When not in use, the table will be locked in a vertical position above the hinged support. (See illustration in appendix.) When in use, the table can be placed above, below, or at water level. By varying the level of the supports, the table can be held level or can be inclined. By lowering or inclining the table the user can be partially or mostly submerged, if so desired. For example, the user can have his or her lower extremities under water, with the head and shoulders above water. A massager, physical therapist, or trainer will be able to either sit on any of the raisable/lowerable seats beside the table – or can stand (with the hinged seats placed in the up position).

One of the basic elements of the hydrotherapy area will be a high-pressure hose from the pool's pump that can provide either warmed or cooled water. A variety of massage and therapy tools can be connected to the hose for use by pool users on themselves – or on persons they are massaging, treating, or training. These water-powered tools will include vibrators, kneaders, choppers, pounders, pinchers, squeezers, scratchers, twisters, tweakers, thumpers, bumpers, strokers, wringers, walkers, warmers, coolers, and other tools that can soothe, soften, or stimulate one's muscles, joints, back, neck, head, feet, or other parts of one's body. Instructions on the use of these tools – along with video demonstrations – will be shown on the pool's computer display.

b. **The exercise table and tools**. The massage table will also be the pool's exercise table. Through the use of detachable or recessible handles and foot loops it will become an effective exercise table. The support line from the pool expander will be used in a variety of exercises, exercises that can be measured and monitored by the pool computer. The pool's computer/TV display will also be able to present and demonstrate many different kinds of exercise activities that can be carried out by the user.

5. **Medical and Therapy Systems**. Oxygen tanks and tubes, physical therapy devices, massage devices, blood pressure and heart rate monitors, and other special apparatus will be available for swimmers with special needs. The fully-equipped expansive pool will have a pump, heater, and other accessories needed for hydrotherapeutic treatment and relaxation.

6. **The Flotation System and In-and-Out Tools**. The fully-equipped and computerized expansive pool systems will include flotation devices to help drown-proof the swimmers. Each swimmer will have a jacket and/or collar that can be inflated if he or she gets in trouble in the pool. The collar or jacket can be inflated or deflated by the swimmer or will be automatically inflated by the system when it detects a failure of the swimmer to conform to safety parameters that have been specified for that particular swimmer. Special flotation systems will be available for inexperienced swimmers and for those with physical limitations or disabilities. The flotation devices may be self-contained or may get air provided by a pump or compressed air tank at the base of the supporting crane, with an air hose paralleling the swimmer's suspension line.

If a swimmer gets in trouble in the pool, he or she can ask the pool expander for extraction from the pool. If the pool computer determines that the swimmer is in trouble, it will initiate the extraction process. Similarly, swimmers will be able to ask the pool expander to hoist them into the pool when they are ready to start their swim.

7. **The Hydrogen Heater**. The primary fuel used on metafarms is hydrogen. And hydrogen just happens to be the ideal fuel for pool heaters. The hydrogen pool heater (see illustration) will be smaller and will operate much more efficiently than heaters that burn other fuels. One inherent advantage of the hydrogen heater is that no vent is required – unlike heaters that burn carbon-containing fuels like methane. With methane heaters, 30 to 40 per cent of the heat produced through combustion is lost through their vents. Virtually all of the heat produced in the hydrogen combustion process can be transferred to the pool. (The hydrogen is burned in an oxygen-only environment – the oxygen yielded in the water hydrolyzing process that yields the hydrogen gas.) The heat is transferred in two ways. First, the pool water that flows around the heater's combustion chamber is heated. Second, the steam yielded in the H_2/O_2 combustion process can be channeled through a condensing coil in the pool, with the pool absorbing the heat from the steam. (Or, the steam can instead be directed to a home heating system, water heater, or other place where heat is needed.) And, on many metafarms, condensate from hydrogen heater cooling coils is the primary source of drinking water.

   In *The Metafarm*, because of their high efficiency and non-polluting nature, hydrogen heaters come into wide use in many places other than the pool room. And, with hydrogen heaters, pool expanders, and quadridomes (see #9, below), expansive lap pools come into worldwide use in cold as well as warm climates.

8. **The Solar Water Heater**. Rooftop heaters similar to those seen on many Arizona homes will also be used in locations with adequate sunshine.

9. **The Quadridome**. In *The Metafarm* most of the outdoor expansive pools have a hemispherical cover called a *quadridome*. A quadridome consists of two *quadrispheres*. One of the quadrispheres, the *superior quadrisphere*, is slightly larger than the second quadrisphere, the *subordinate quadrisphere* (see illustration), so, when the superior quadrisphere moves, it travels over the subordinate quadrisphere – and conversely. When the two quadrispheres are fully descended, the pool is completely covered by the quadridome. Either or both quadrispheres can be moved 90 degrees, permitting the pool to be shaded at any time – or, if desired, exposed to the sun. Quadridomes will be marketed in kit form, simplifying installation in remote locations. The quadrispheres will include reversible black and white panels (or photovoltaic panels) to help in heating and cooling the pool area. All quadridomes can be raised or lowered with hand cranks, but some will be motorized, especially the larger domes. Quadridomes will make expansive pools more practical and feasible in cooler climates. Thus, in *The Metafarm,* expansive pools come into wide use in colder regions as well as the warmer regions of the planet – and in urban areas as well as on metafarms.

10. **Entertainment Systems**. For those who wish to be entertained or informed while swimming, waterproofed and electrically-insulated television and radio

receivers, DVD systems, and other entertainment and information devices will be available. The mu room's entertainment and communications devices will employ a low-power relay transmitter that will deliver signals to the audio earplugs and/or waterproofed headsets worn by swimmers. Such receivers will make it possible for swimmers to hear the transmissions in stereo. Alternatively, sound-transducing earplugs will be available to swimmers so they can hear people talking, phones ringing, or other sounds around the pool. Or, those who want quiet can use conventional earplugs.

11. **Communications Systems**. For those who wish to keep on working while working out, expansive pool users will be able to use remote-controlled and/or voice-activated telephones, dictating machines, computer input and/or output devices, and other communications tools adapted for users in the water or at poolside. Also available will be one-way or two-way closed-circuit TV systems that can be used by the swimmer and/or those monitoring the swimmer(s). Such systems will enable the swimmer to observe other rooms in the home and the home's immediate environment.

12. **Training Tools, Games, and Toys**. Pool expanders will be used extensively by those who are training for swimming competitions. They are likely to come into common use in colleges and high schools and in Olympic and other training facilities. In addition to their use in training, computer-served expansive pools will themselves become contest sites. Pools with two or more pool expanders will permit races and other competitive efforts. Or single expanders can be used for serial competitions.

    Additional equipment can be used in the pool or added to the expander for fun or exercise. For example, instead of attaching the O-ring to the expander's support line, a handlebar or hand rings could be attached and used for various kinds of arm, shoulder, neck, and stretching and bending exercises.

    As more and more people start spending time in expansive pools, new exercise tools, games, and toys will be devised, developed, and brought to market. **Such accessories will help the expansive pool become a favorite family fun and fitness facility**.

13. **Densometer**. The densometer is an expansive pool accessory that will show the swimmer's muscle-to-fat ratio. The densometer will consist of (1) a scales that measures the swimmer's weight and (2) a water displacement gauge that measures the quantity of water displaced by the swimmer in the pool. Because muscle tissue is heavier than fat tissue, those two measures can be used to determine the swimmer's muscle-to-fat ratio. Changes in muscle-to-fat ratio are more meaningful indicators of improvement in physical condition and health than changes in weight.

    The top-line densometers will have electronic scales and water displacement gauges that feed the data directly to the expansive pool's computer. With the computer-served densometer, daily readings can be recorded to chart each swimmer's progress in changing their muscle-to-fat ratio.

    The least expensive densometers will consist of a bathroom scales, a water displacement gauge, a pencil, and paper.

14. **Video productions for expansive pool users**. If expansive pools become popular, DVDs and downloadable digital products that show how to optimize pool use will come into wide use. Such products could prove to be profitable adjuncts to the expansive pools.

    Various kinds of videos will be produced. Some will be developed to be played and watched while the swimmer is in the pool. These might provide instructions, stroke changes, and pacing the swimmer can carry out while swimming. Other videos will show and explain techniques to be employed in the use of the expansive pool and its accessories. Videos will be produced that demonstrate massage and physical therapy techniques and various kinds of exercise routines. Videos aimed at pool users with various kinds of physical handicaps will be produced.

    In addition to being profitable in their own right, such video productions should contribute to increased use of expansive pools and their accessories.

15. **Expansive pool centers**. The expansive pool product lines will present some pregnant possibilities for franchising. One kind of franchise might be a full-line expansive pool center franchise. Such full-line centers would provide a complete line of expansive pool components and accessories, plus a wide variety of related services. The full-line expansive pool centers would have a number of expansive pools in operation that people could use for an hourly charge, pools people (1) could use as their neighborhood swim and fitness facility, (2) could use to try out an expansive pool or expansive pool equipment before deciding whether or not to buy and install their own, and (3) could use as their expansive pool away from home.

    The center's pools might include (1) a ground-level expansive swim spa, (2) an above-ground expansive swim spa, (3) an above-ground portable expansive pool, (4) a two-place concrete pool, (5) and a large multi-user pool (like those that might be used at schools, nursing homes, hotels, health clubs, YMCA/YWCAs, Olympic training facilities, and other facilities designed to serve large numbers of expansive pools users).

    The full-line expansive pool center would assist prospective expansive pool buyers in planning, designing, and equipping the kind of expansive pool that would be most appropriate for them. The full-line center would provide and install the components and accessories the user might want (however, in most cases, the center would have subcontractors construct ground-level concrete pools, covers, heaters, pumps, and other facilities that need to be installed by licensed contractors). The center would fit and tailor harnesses for expansive pool users. The center would provide training and training materials for expansive pool use. In short, the full-line center would provide any product or service that might be wanted or needed by an expansive pool user.

    Such centers could market both new and used expansive pool equipment. After equipment has been used in the center and is showing wear, it could be sold – giving an allowance for depreciation. Also, used equipment that has been sold to the center, equipment that has been repossessed, and other used equipment acquired by the center can be resold. Much of the used equipment would be channeled to centers in less-developed countries where prospective purchasers and users have less money available for new expansive pool facilities.

Full-line centers might be franchised around the world. Or, alternatively, franchises might be offered to dealers who would provide more limited services or product lines. For example, specialty franchises might be offered to dealers who would provide expansive pool computers and other kinds of electronic equipment for communication, entertainment, or work at the pool. Franchises might be offered to dealers who would provide various kinds of medical and therapeutic equipment for use with expansive pools. Franchises might be offered to those who would install quadrispheres and other kinds of covers for expansive pools – and/or to those who might install hydrogen or other kinds of heaters or pumps for expansive pools. Franchises might be offered to individuals or organizations who would provide harnesses to expansive pool users that require tailor-made harnesses (e. g., the aged, young children, people with various kinds of handicaps or physical limitations). Franchises might be offered to those who would provide training and training materials for expansive pools users. And so on.

16. **Expansive pool partnering**. Many of the expansive pool products (such as pool computers, quadrispheres, hydrogen heaters, and other accessories) could be developed and produced by strategic partners and other collaborators. The company that becomes the expansive pool leader will have the opportunity of enlisting a wide variety of manufacturing, financial, and service organizations that can help bring the new products to market.

Illustrations:

The Home of Tomorrow: The Good Health Home
http://www.mudoc.com/hmoftom.htm

Three New Rooms for the Home of Tomorrow
http://www.mudoc.com/hmtomrms.htm

Expansive pool layout
http://www.mudoc.com/homepoolsketch.htm

. . . . and coming soon to a PC near you (call for release date)

Expansive Pool Massage/Exercise Table

The O-Ring Belt

The Quadridome

The Simple Heater: The Hydrogen Heater

The Porter Pool-Xpander