

Helping Designers Harness the Power
of
Real Time Digital Art

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INTRODUCTION

OUR MISSION

Space Time Art Works helps designers leverage their unique aesthetic sensibilities with real time digital art for intimate spaces, brand awareness and wow factor.

REAL TIME DIGITAL ART

Real Time Digital Art contains an embedded computer that uses awareness of the current environment to modify itself. The awareness comes through a combination of sensors and/or knowledge of the world. The modifications are the result of randomness and/or calculations as simple as a single if-then statement or as intricate as a neural network.

Real Time Digital Art is firmly entrenched in the art world and is finding its place in the design fields. The “Digital Art Links” page shows some examples of its evolution and current state.

The software and hardware that makes embedded computers so powerful is also a barrier to entry. Very few people have the design sensibilities and technological capabilities to work in this area. As a result, the projects tend to be very large and few in number.

A THREE LAYERED APPROACH

Space Time Art Works™ has created a set of tools for designers that solves this problem. It incorporates that technical expertise on three levels that cost-effectively address issues of standards, customization and ease of use.

The Digital Art Operating System for Real Time Applications (DAOS™)

supports software engines that control real time digital art,

Parameter Driven Software Engines provide the kernel for applications. The Alchemical Sketchbook™ is one of the many possible software engines for the DAOS™, and

Applications are specific uses of software engines. The Chronoclast™ is one of the many possible applications of the Alchemical Sketchbook™.

WHAT’S RIGHT FOR YOU?

If innovation is part of your strategy, but you’ve never worked with digital art, the Chronoclast™ is a way to start offering your clients small, cost effective projects. As you can see from these pictures, the way it mixes time and timelessness lets you create a wide variety of moods and effects from meditative to edgy.

If you’ve been working with digital art and want to deepen your capabilities using the insights of depth psychology, we can use the Alchemical Sketchbook™ to create an application based on your existing images and effects.

If you’re past the research phase and are looking for robust systems to disseminate your knowledge through your organization, we can create the necessary extensions to the DAOS™ and use your aesthetics to build a software engine to support your goals and applications.

FOR MORE INFORMATION

Learn more about how to leverage your creativity with real time digital art:

805.624.6356

info@spacetimeartworks.com

DIGITAL ART LINKS

About half of these links represent design's first generation of digital thinking, which enhanced signage and illumination with the drama and quick cuts that define the medial age. Examples include the Hard Rock Hotel, MGM Grand, Skycity, Mosaic Hotel, Verve Hotel and the Berlin World Arena.

The Marriott Light Wall, Bad Driburg Reception Light Sculpture and Beijing Entertainment complex are transitional applications because they incorporate digital thinking for more subtlety and sophistication.

Embedded computers, a more powerful type of digital intelligence, allow for the more psychologically nuanced applications of the second generation, such as the London Atrium, the New York City Electric Fountain and the work of Erwin Redl.

Hotels

[Hard Rock Hotel and Casino in Biloxi, Mississippi](#)

[Marriott Hotel Light Wall, Berlin Germany](#)

[Marriott Residence Inn, Burbank CA](#)

[MGM Grand Macau](#)

[Mosaic Hotel, Delhi](#)

[SAS Radisson Hotel in Linkoping, Sweden](#)

[Skycity Darwin Hotel Casino](#)

[Verve Hotel, Kolkatta](#)

Other Interiors

[Bad Driburg, Germany Reception light sculpture, static](#)

[Bad Driburg, Germany Reception Light Sculpture, Video](#)

[Erwin Redl, LED Artist, Portfolio](#)

[Erwin Redl building stairwell proposal](#)

[London, England Office Atrium](#)

[Los Angeles, CA Endeavor Offices](#)

[Sydney, Australia Fairfax Digital](#)

[Sydney, Australia World Square](#)

[Utrecht, Netherlands Kitchen](#)

Other Exteriors

[Beijing, China Xicui Entertainment Complex](#)

[Berlin, Germany World Arena](#)

[Berlin, Germany Flare Facade](#)

[Los Angeles Airport](#)

[New York City Electric Fountain](#)

[Raleigh, North Carolina Convention Center](#)

DIGITAL ART OPERATING SYSTEM (DAOS™)

Just as your computer's operating system sits between your peripherals and the software engines that use those peripherals, the Digital Art Operating System for Real Time Applications (DAOS™) sits between the displays or motors in the artwork and the software that controls them.

As a result, our hardware tools can create displays and motors of any configurations (see the Custom Designs section,) just as you can purchase a wide variety of printers, sound systems and monitors.

The DAOS™ can control multiple design elements that mix high power, seven segment, discrete and matrix array LEDs with servo and stepper motors.

THE ALCHEMICAL SKETCHBOOK™

The Alchemical Sketchbook™ is one of many possible software engines for the DAOS™. It speaks dialects of alchemy, which Jung considered the metaphorical language of psyche. Other software engines could be based on other ideas and aesthetics.

The Alchemical Sketchbook™ creates mind candy for the curious by mining the indirection of the archetype instead of refining and focusing a particular moment's formula.

It's parameter driven so you can control various qualities concerning the image itself, transitions, paths and speed.

You can see how the Alchemical Sketchbook affects the Chronoclast™ in the Alchemical Imagination section.

CHRONOCLASTS™

Chronoclasts™ represent one of many possible applications of the Alchemical Sketchbook™.

Using Solutio as their primary impulse, they create enduring memories by investigating synchronization, the apparently irresistible impulse that converts timelessness to time.

They channel the powerful emotional energies associated with the long tradition of public clocks in town centers. The chance to learn to tell time all over again recalls powerful childhood memories of motivation and accomplishment.

Chronoclasts™ belong wherever thought is welcome. They'll intrigue people and spark conversations in intimate spaces, lobbies, reception areas or near the elevators. They're customized using the equivalent of a "my playlist" of options.

ABOUT THESE PICTURES

The Custom Designs section shows how the DAOS™ unleashes creativity in the design of displays. The Alchemical Imagination Section shows how the Alchemical Sketchbook™ guides the display.

A different application would use the DAOS™ to design different displays and the alchemical processes would be working on different images for different results.

These pictures show just a few of the possible physical configurations and demonstrate only some of the hundreds of remarkable time formats. We've inserted some of them into settings to suggest context. Motion is an integral part of the Chronoclast's™ alchemical approach, but we'll leave that to your imagination!

CUSTOM DESIGNS

The DAOS™ lets you leverage names, logo, and trademarks

Use the psychic power behind our age old fascination with time to leverage your message in new and extremely powerful directions.

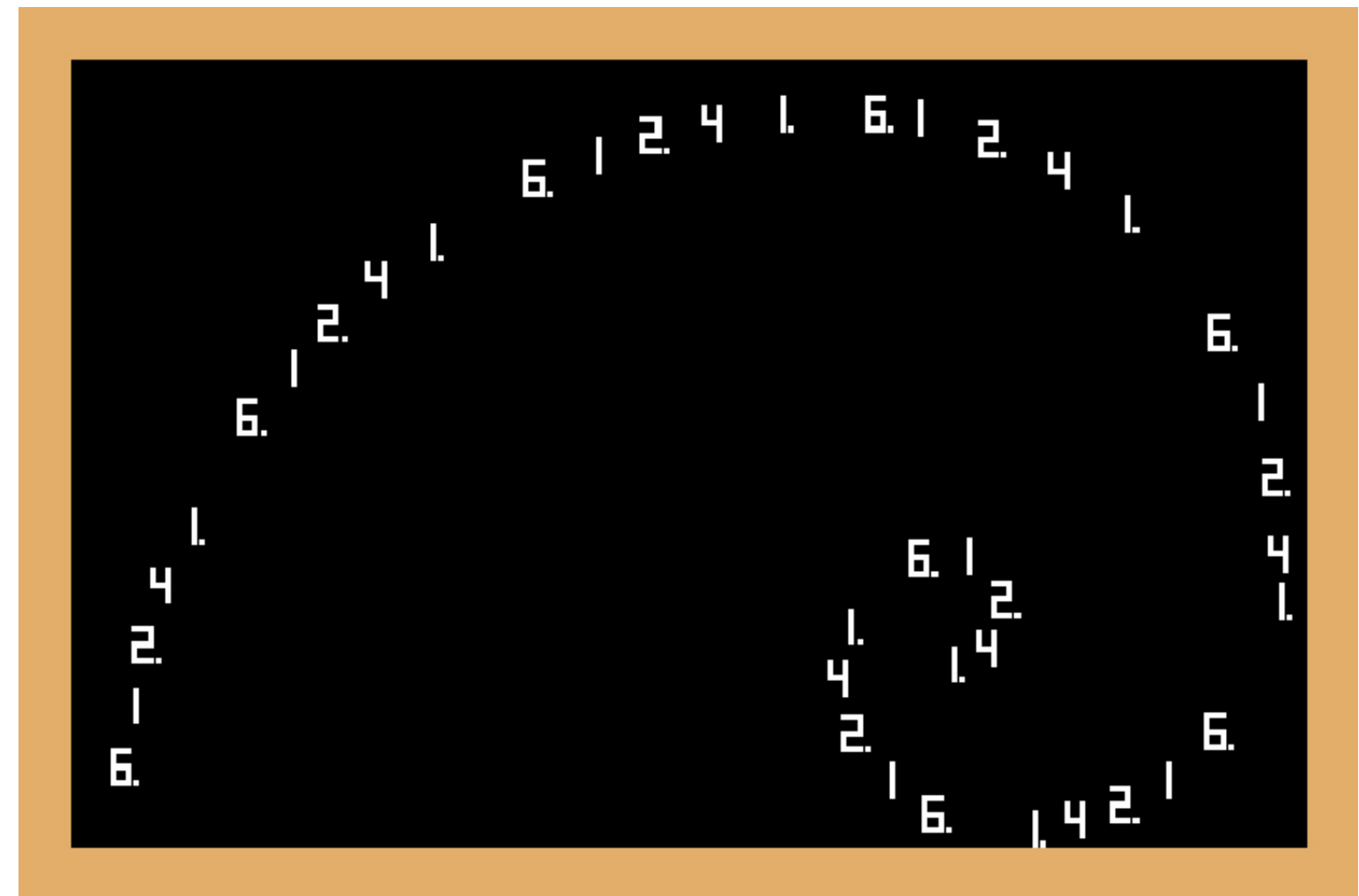
Brand strategists will be intrigued by our ability to create a display that will have people completely engaged with their name, logo or other message on a subliminal level.

A Chronoclast™ in the shape of a corporate logo would make an unforgettable and constantly reminding gift.

Anything is possible! Use the examples on these pages to start imagining your own designs and the different ways time could appear in them.

THE GOLDEN MEAN

(1 + $\sqrt{5}$)/2 doesn't sound magical, but the golden proportion has been the basis of some of the most soothing and mystical designs throughout history.



LETTERS AND WORDS

Letters can be created in a variety of styles and combined to forms names and phrases.

The intensity of the displays can vary.

Each letter is shown as both two bands outlining the letter and as a back and forth ribbon that packs it.

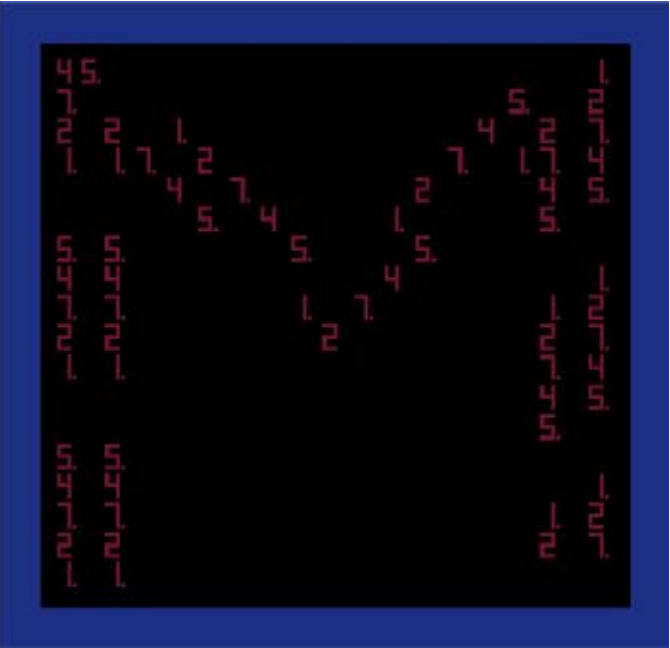
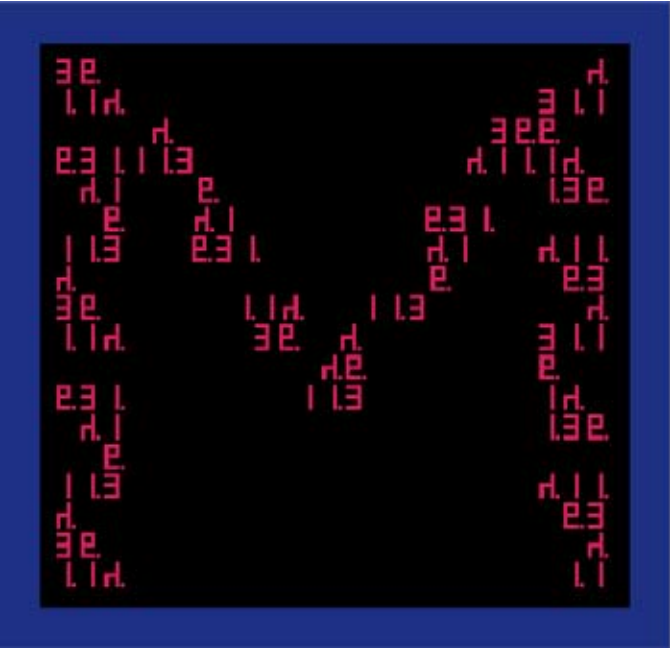
Try to imagine the numbers snaking through and around as they change with the time!

M

The letter M, outlined and filled.

4:11:36 is an upside down back and forth ribbon.

1:27:45 in two bands that outline the letter.

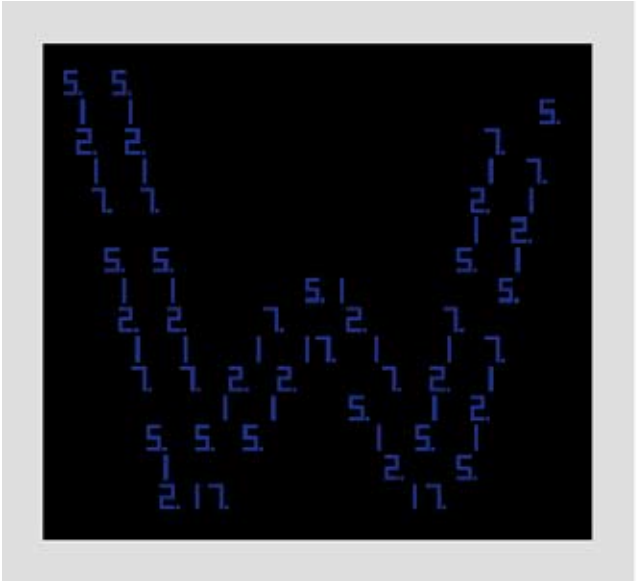


W

The letter W, outlined and filled more densely than the M

5:12:17 outlines the W.

7:32:19 packs the W with a back and forth band starting at the top left



CIRCULAR ARCS

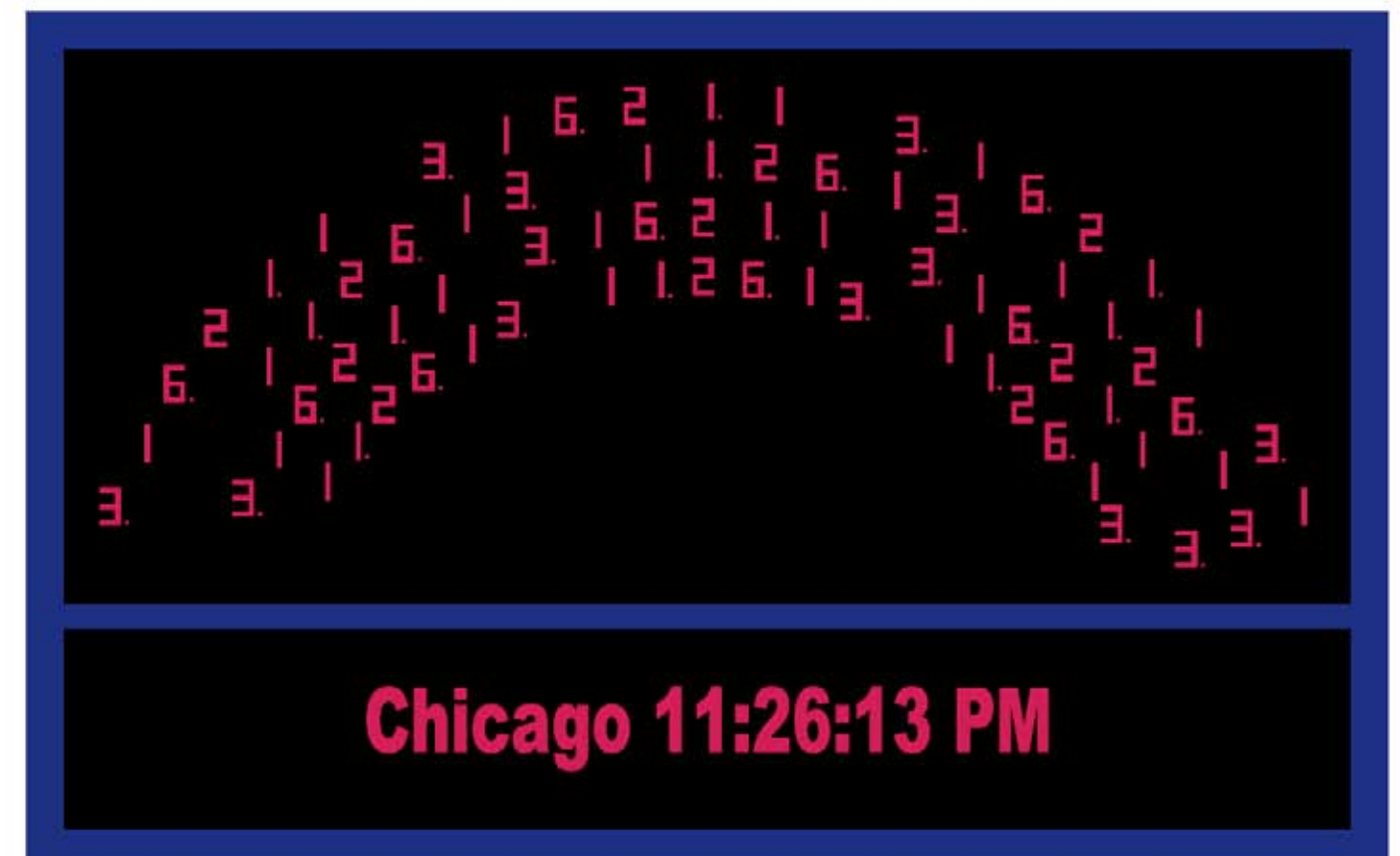
Four circles interact in a display that dances from one time zone to another.

Bogota's 9:12:41 radiates out and in from the center starting at the bottom left. 9-1-4-2 is in the first arc, then it moves clockwise to display the 1, then a space, then 9-1, then a clockwise movement to display 2-4-1 and so on. The time also appears along the inner and outer circles due to the wonders of geometry.

Chicago's 11:26:13 appears in four concentric circles alternating between a clockwise and counterclockwise orientation.

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THE ALCHEMICAL IMAGINATION

Chronoclasts™ are controlled by the ideas in the Alchemical Sketchbook™, the underlying engine.

Creators of spaces that tend soul will appreciate how the alchemical imagination reimagines the clock's rhythms of time into a mantra.

Just like individual alchemical drawing which depicts just one stage of the entire process, these pictures are each meant to suggest how one of the four alchemical processes might work. A full alchemical exploration would incorporate all of them.

Thanks to Jeffrey Raff and his book "Jung and the Alchemical Imagination"

SOLUTIO

The steady dissolving power of water has worn away the most stubborn rocks. The time of today has been solidifying for eons. Experience is dry.

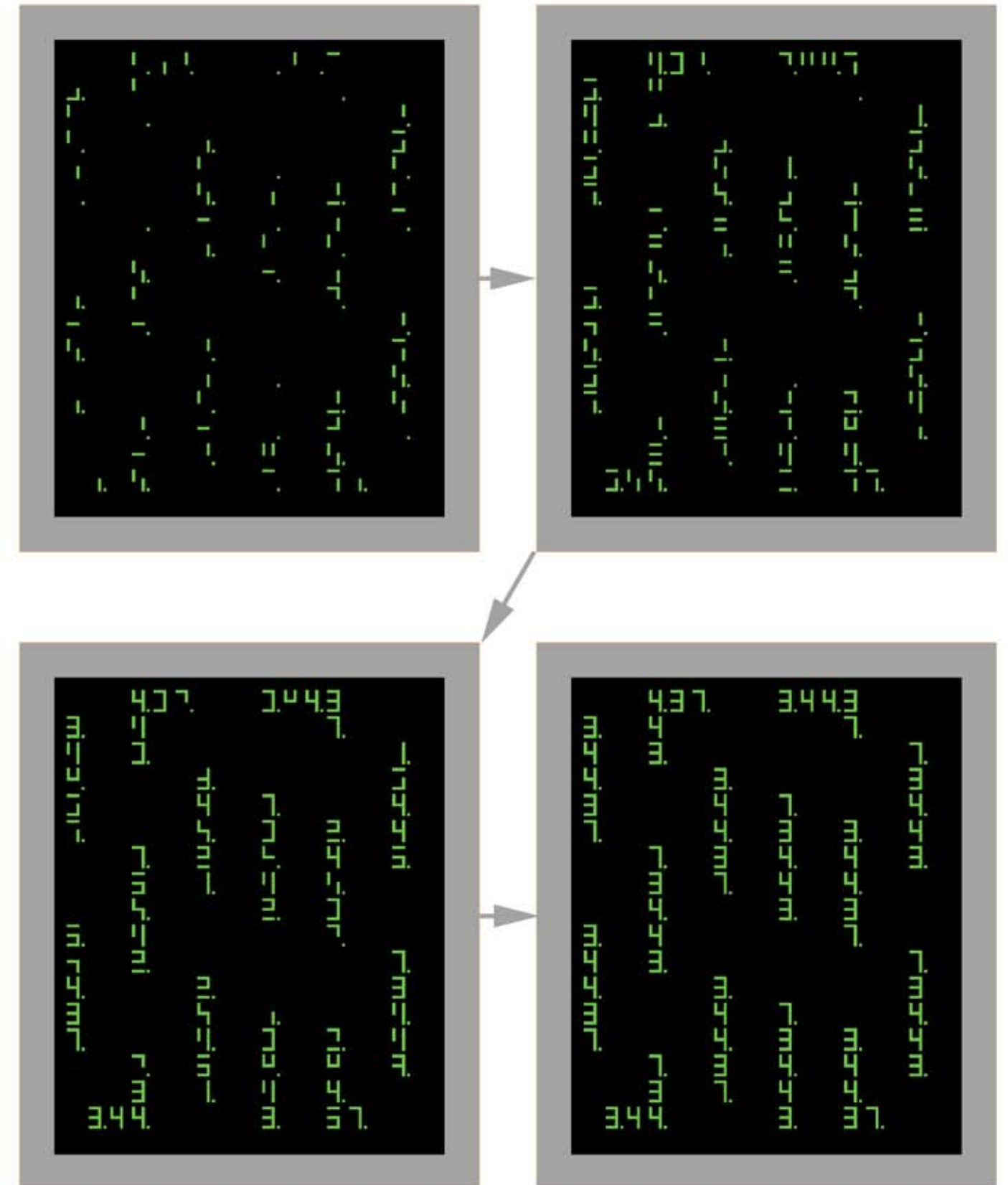
Chronoclasts™ playfully deconstructs the monolithic clock face into a solution that gently and persistently dissolves basic assumptions with hundreds of amazing new formats (of which only a few are shown in this document.)

COAGULATIO

Coagulatio is the process by which spirit returns to the body.

Alchemy is a process of breaking down and reconstituting, with imaginal encounters happening at every step.

After the elements of time disappear from the display, its spirit engages the computer system and is then returned to the display one pixel at a time.



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SUBLIMATIO

Sublimatio liberates the timeless spirit from the yoke of time so it can ascend to a new perspective.

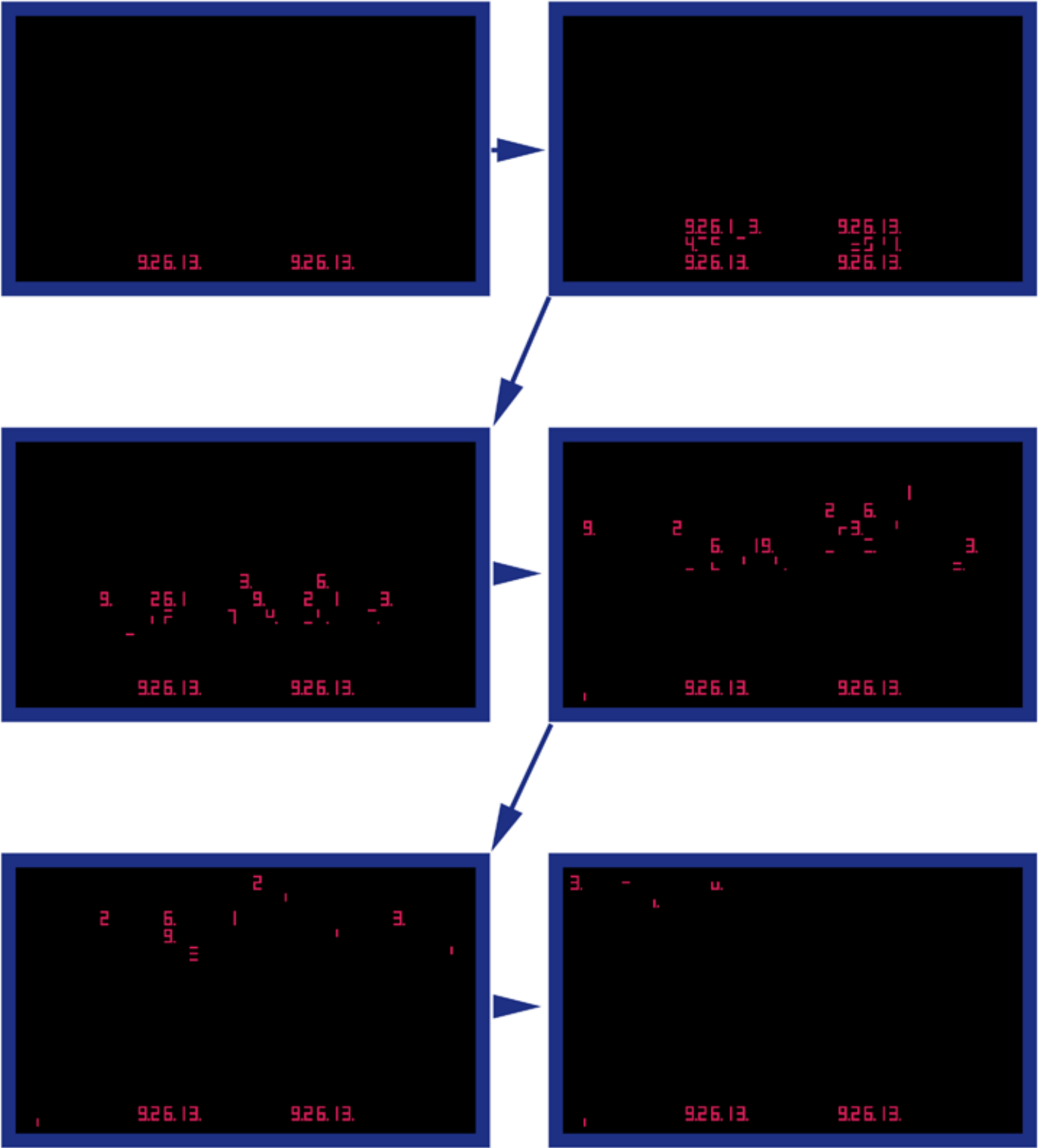
Sublimation involves rising above a situation, transforming our base instincts into the spiritual realm in order to get a higher perspective. Only by separating from the body can the soul contemplate its own eternal nature and uniqueness and gain true self knowledge. The treasure having been found, the soul returns to the body, animating and transmuting it into its own nature.

Time in the modern world is like molasses, holding us in the muck of the Nigredo. It's lost its numinosity. Sublimatio is the way we free its soul and with it ours. We let it rise back into the eternal heavens in which the first sundials looked for the deities.

When time has been freed from the yoke of modern culture, it can reunite with timelessness in the alchemical marriage. Together, King and Queen, they return to our lives, animating and transforming our experiences.

Time becomes less definite as it drifts slowly upward, and mingles with the softness of the air. At some point it becomes numbers, representing the pure math from which it was derived. Even those numbers eventually dissolve into contemplation.

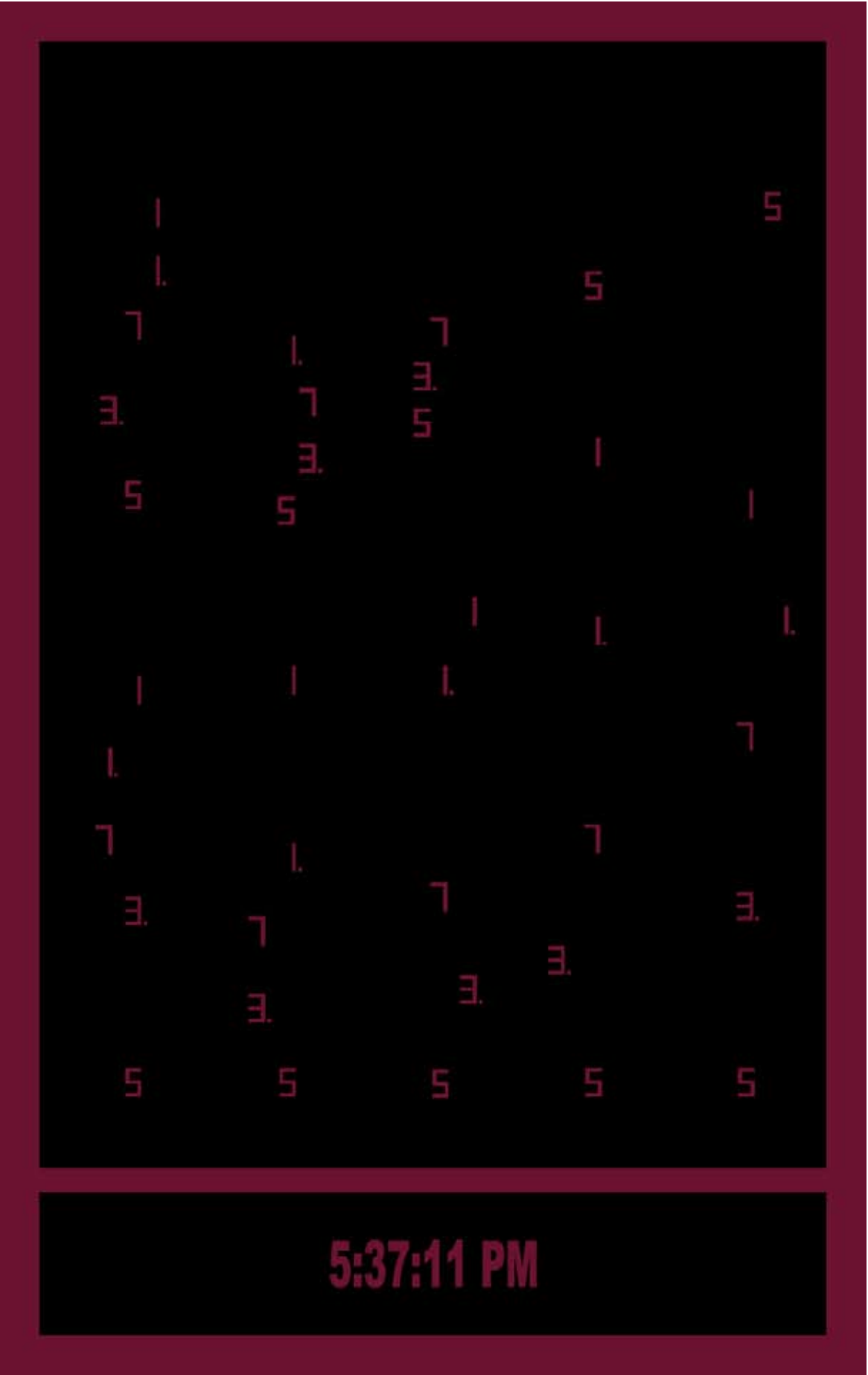
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CALCINATIO

Timelessness smolders inside our cool personae

Calcinatio burns the exterior crust of assumptions. It reduces our strivings to ashes. The strings of our theories rise like smoke in a slow dance with the universal rhythms.



MULTIPLE TIME ZONES

Multiple Time Zone clocks are boring wastes of prime wall space that do nothing but tell the time. They don't tell anything about you.

Any of these Chronoclasts™ can be configured for multiple time zones and accommodate many cities in many languages.

You'll have something a lot more functional and a lot more memorable.

A Chronoclasts™ in a hotel suite could be personalized to include time zones from the guest's travel itinerary and home town.

We can provide a turnkey multiple time zone Chronoclast™ that includes a case and is ready to plug in and enjoy.

RECEPTION AREA

5 cities cycle through 4 displays

1:27:45 in Los Angeles is along a diagonal path.

4:27:45 in New York is on 3 horizontal lines.

9:27:45 in London is in a continuous vertical band that starts at the top left, proceeds down, then right, up, right again and then repeats.

12:27:45 in Kuwait City is in two nested rectangles. One goes around the outer perimeter of the display and the other uses the third and fourth horizontal lines.

Later,

6:12:53 in Los Angeles is upside down on two horizontal lines.

9:12:53 in New York is a mirror image along two diagonal lines.

8:12:53 in Chicago in upside down on a continuous vertical band. An upside down 2 looks like a 5 and vice versa, so it also looks like a regular 8:15:23. You have to watch it for a few seconds (In one second, the upside down 4 won't look like a regular anything)

5:12:53 in Kuwait City is a mirror image on a diagonal path.

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LOUNGE

3 cities cycle through 1 display.

1:27:45 in Goleta, the home town of the group that has rented the lounge for the evening, is shown along 7 diagonal lines.

Later, the local time of 3:44:37 is in in a continuous vertical band that starts at the top left, proceeds down, then right, up, right again and then repeats.

Later, New York time of 5:17:34 appears upside down in three nested rectangles.

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HOTEL ROOM WITH ITINERARY

The business traveler's itinerary informs her Chronoclast™. It's a fun way to help schedule her days of international contacts and remember those at home.

Los Angeles' time of 1:27:45 is in a continuous vertical band that starts at the top left, moves down, then right, then up, then right and continues. Later,

London's time of 9:38:12 is upside down along three diagonal lines. Later,

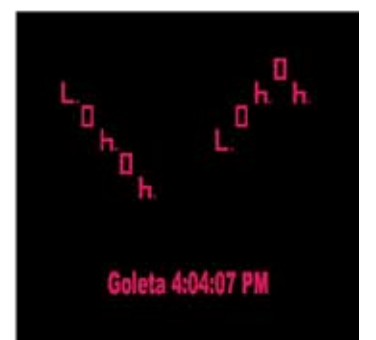
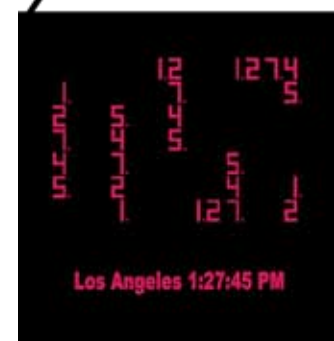
Bogota's time of 4:52:46 is upside down in two vertical pairs. Later,

Munich's time of 11:07:11 is in two nested rectangles. Later,

Kuwait's City's time of 1:41:36 appears as a mirror image along three horizontal lines. Still later,

Her home town Goleta's time of 4:04:07 is displayed as an upside down mirror image along a diagonal path.

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HIGH TECH ROOM

The high tech look of the Chronoclasts™ display matches the chrome bed.

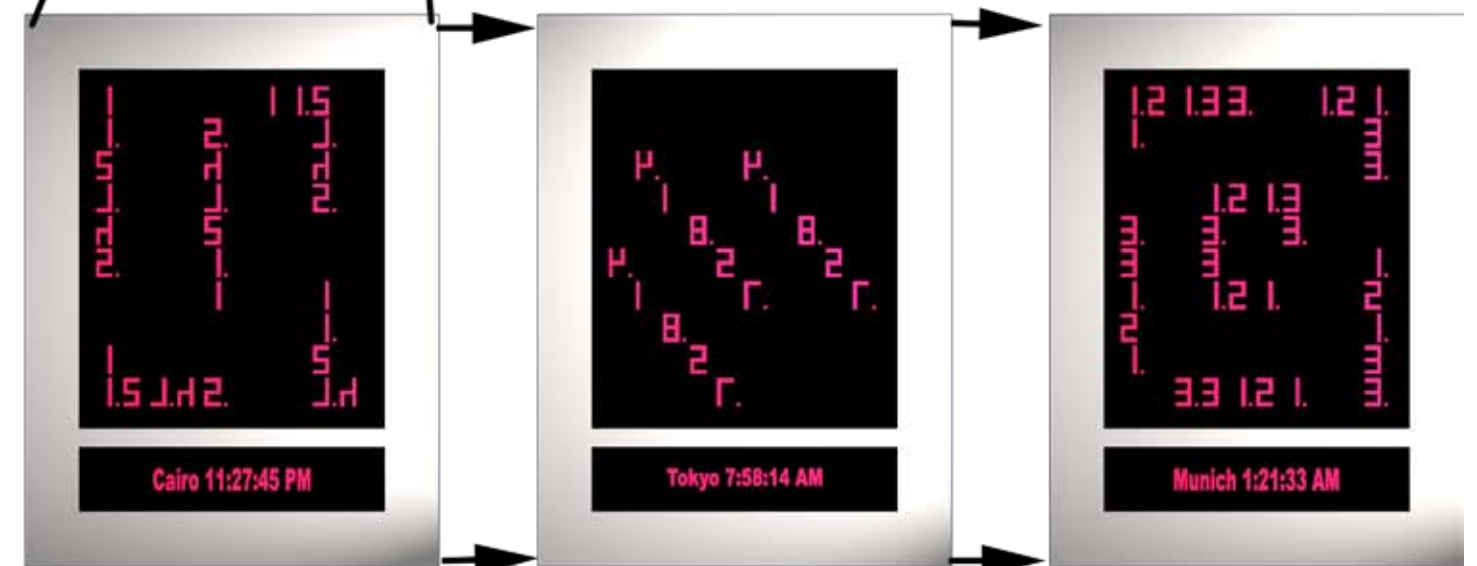
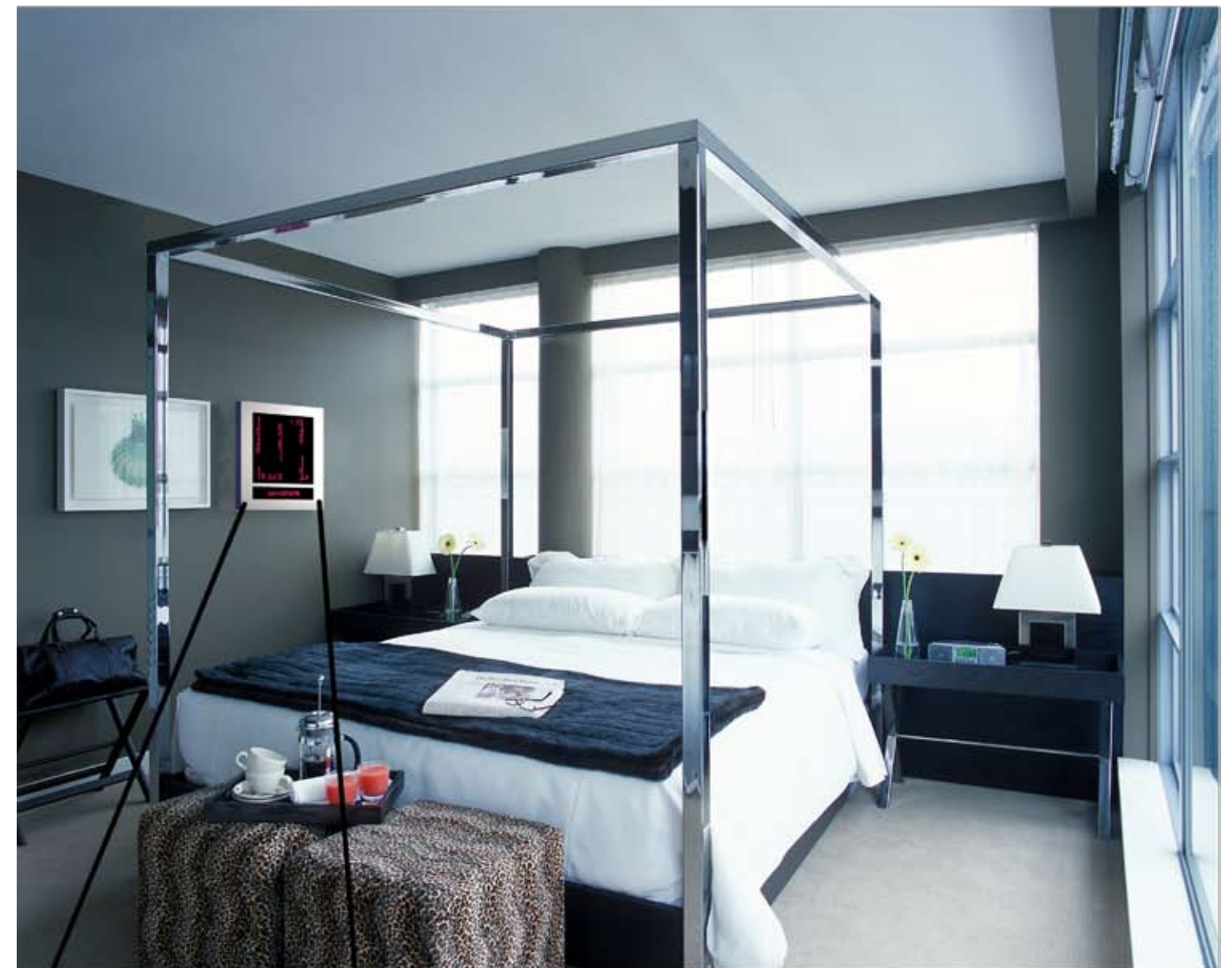
Cairo's 11:27:45 is in a continuous vertical band that starts at the top left, goes down, then right, then up the middle, right almost to the end, then down and over before ending. Later,

Tokyo's 7:58:14 appears as a mirror image along three vertical lines. Still later,

Munich's 1:12:33 is shown in two nested rectangles. One goes around the perimeter and the other, smaller one, is inside.

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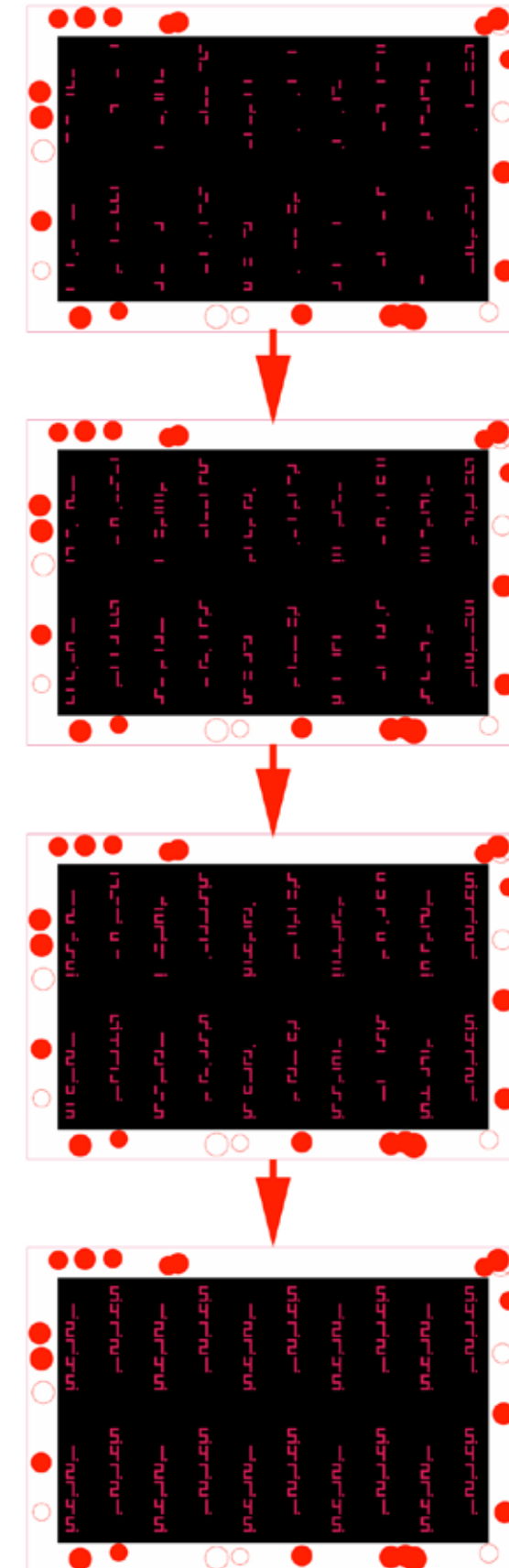


SPA

A Chronoclast with dissolving transitions provides a soothing visual melody of times in which to soak a tired mind.

1:27:45 i is in a continuous vertical band that starts at the top left, proceeds down, then right, up, right again and then repeats.

It fades in and out over a few minutes at a languid, relaxing pace.



ESCALATOR INSTALLATION

On the left, 1:27:45 is displayed in numbers rotating counter clockwise inside numbers rotating clockwise

On the right 1:27:45 appears in two nested rectangles



RECEPTION AREA REVISITED

Here the Chronoclast™ in the reception area is mounted under the surface in two locations.

Under the “Reception” sign, 1:27:45 rotates clockwise, for now.

At the far end it appears in a series of vertical bands.



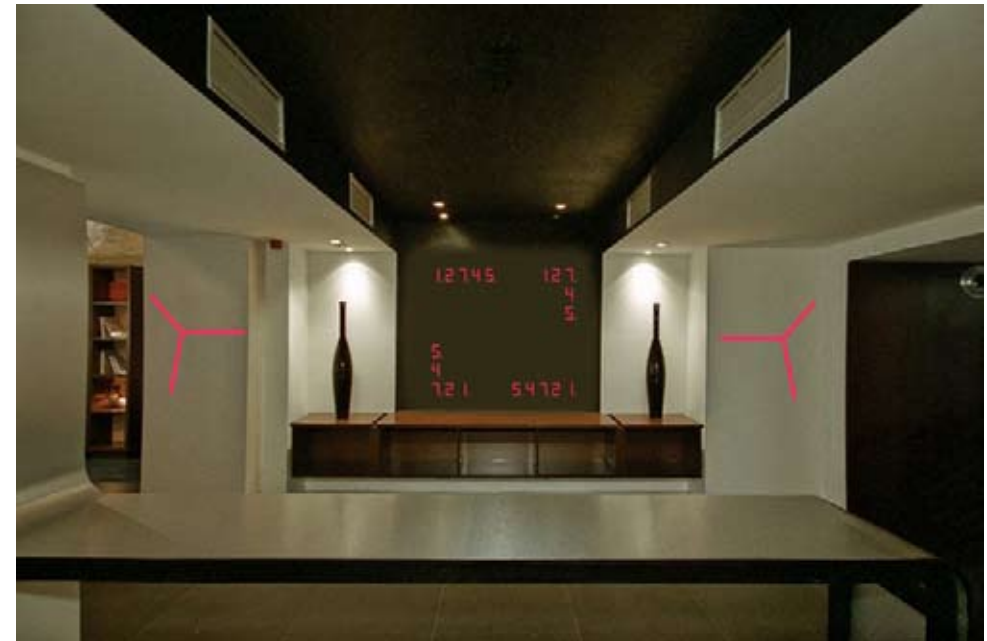
SCULPTURE

Two of the six sides are visible. At the top, the time rotates clockwise as numbers, at the bottom it rotates counter clockwise.



QUIET SPACES

On the pillars and at the far end.



PRESS

Change is the only constant. The time keeping paradigm has been transformed many times since the first sun dial. The computer revolution has revolutionized countless products and time machines will not be immune.

Read about what's ahead and the consequences for the world, your organization and you personally.

THE NEXT GENERATION OF CLOCKS

An article scheduled for publication in the February 2009 issue of the National Association of Watch and Clock Collectors Bulletin

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Paradigms don't stop changing. The sun dial, the hour glass, the pendulum, the quartz, the digital. The evolution of the clock is far from over. In this article I'll share some of my thoughts on the future of clocks, based on my studies, observations and work building clocks with computers inside.

The industrial revolution revolutionized industry because of major progress in power, accuracy, repeatability, consistency, rate of production and rotational reliability. These changes profoundly affected our relationship with time and clocks, stripping away much of their numinosity and turning them into scheduling and synchronizing servants of industry.

We're all aware of how machines leverage our strength, but just as importantly, they leverage our accuracy. Only a machine could arrange millions of switches on a computer chip less than an inch square. No matter how well a person can do something once, they cannot repeat it with a precision of more than about 1 percent. Machines can do the same thing over and over with a lot more precision.

Machines repeat at a constant rate and output. Water clocks, candles and hourglasses dwindle, expire and require resetting, all events that throw the accuracy off. Mass Production made clocks more affordable and therefore let them go new places.

Reliable rotation was a backbone of the industrial revolution. A rotational coordinate system is well suited to time's circular nature, which cycles through seconds, minutes, hours, days, and so on. Rotation is natural addition. Gears let you carry.

These factors led to a clock that can be set to a time and then accurately measure elapsed time and display a current time. Not a time that's current because it has been synchronized to an external standard, like the sun, but a time that's current because the durations have all been added together.

We replaced the sun with calculations and got a space time coordinate system that could be mathematically and mechanically navigated and manipulated. There has always been a "workable" space time (meet at the mountains when the moon is full,) and the industrial revolution dramatically increased the accuracy of the grid.

Scheduling has both a spatial and a temporal component. The accuracy of the scheduling is related to the accuracy of both and determines the span over which reliable scheduling can occur.

Reliable rotation increased the temporal accuracy through a more widespread and consistent time system which meant that things like trains, with their temporal span, could be brought into scheduling. This was great because trains were much more accurate spatially than wagons.

Scheduling is coordination on a human scale. Let's all be at a certain place, give or take a few feet, at a certain time, give or take 5 minutes. When we can increase that precision by a factor of thousands, we have synchronization. Let's have the gears of these two machine parts both be at the same place, give or take a millimeter, at the same time, give or take a millisecond. Increase that by thousands and we're sending data packets over the internet and reassembling them at the end of their journey.

Synchronizing is the dominant impulse of our world.

We've been in an era of unbundling, an age of specialization and customization. One size no longer fits all.

Integrated circuits and software have unbundled clocks. There are cooking clocks on ovens, alarm clocks in radios, version clocks in computers,

reminder clocks in PDAs, duration clocks on cell phones and media players and bargain clocks in the drugstore. The collectible clock has what's left, but we're not sure what that is.

In the last 50 years, space has spread out in a process we call globalization and to which we've devoted a lot of social and cultural attention. Meanwhile, time has contracted into the clock pulse in a process which has been pretty much ignored except on a technological level.

Our relationship with time is ripe for change. Digital technology is transforming industry after industry and our relationship with time is in desperate need of re evaluation.

The latest force in digital technology is "computers inside." Also known as embedded systems, they're paradigm changers and have transformed the rotary into the cell phone, the mono LP on a clunky record player into an I-podlike and the Brownie into a 5 megapixel camera. They run our communications infrastructure and factory floors.

There is a deep structural connection between clocks and digital technology through the clock pulse which makes this a particularly appropriate technology for the next generation of clocks.

We've lost touch with the aspect of time thought of as timelessness. The short sighted thinking that caused the environmental and other crises is not visually short sighted but temporally short sighted. We've lost touch with the eternities. Our deteriorated relationship with time is the reason we feel frazzled, disoriented and hectic.

Our body needs repetition on a regular basis. So we have Circadian Rhythms, internal clocks that cycle everything from hormone levels to hunger pains to sleepiness.

Circadian rhythms might make me tired every 23 hours and 53 minutes and you every 24 hours and 6 minutes. Left on our own, each day, our

wake up and bed times would move 13 minutes farther away from each other.

That dilemma is prevented by the sun, which signals the start, middle and end of each day. Our circadian rhythms all synchronize like a computer reset and it's that adjustment which lets us agree on time.

If there was no synchronization, we'd be in a billion different time zones, without a common time. We'd each have our individual time..less, less a common time.

I believe it's synchronization that transforms timelessness into time.

Timelessness and imagination are linked.

The rhythms in dreams are unsynchronized and that's why, when we try to synchronize them in retelling or remembering, there's nothing to grab onto.

Timelessness may be what scientists call imaginary time, which occurs inside black holes.

However, before we get inside a black hole, we must deal with the infinity at its door, known as the Schwarzschild radius, where the time dilation predicted by Einstein's equations becomes infinite, forming an impenetrable boundary.

If something falls into a black hole, no external observer will ever see it happen. Over an eternity, it will get closer and closer and closer, but never quite get there, like the tortoise and the hare.

If time is a verb that moves processes to completion, and you never see the object complete its trip into the black hole, then there was no movement at the boundary and no time as an action verb.

The Schwarzschild radius is timeless and the imagination is held by time-

lessness.

The gravity of the pendulum clock may be more timeless than the electricity of the modern computer and battery clocks.

In the cosmos, gravity creates black holes and their timeless interiors

On the earth, the gravities of the moon, earth and oceans create the unsynchronized timeless motion of ocean waves while the focused precision of electricity creates the synchronized time based motion of our digital devices.

When psychological gravity makes our eyes heavy, we fall asleep and dream. Light from the electromagnetic spectrum jolts us back to attention.

In string theory, the graviton is a closed string with the endlessness of no start or finish. The photon, a characteristic of electromagnetic theory, is an open string with the finiteness of a beginning and an end.

In Einstein's theories the uniqueness of light determines the nature of space and time. Light determining time brings us back to the circadian rhythms.

Electricity is replacing gravity as the dominant force in our lives. We even communicate electronically instead of walking (carrying our body through the forces of gravity.)

Modern clocks are as much a cultural reflection as a functional necessity.

We give them a glance, because our attention is always on the move in this frenetic world.

Clocks update themselves every second because we need to know the latest. Yesterday's news is ancient history. A lot can happen in a few minutes. Or so the medial mentality supposes.

Clocks are precise, unequivocal and familiar. They speak to themselves in

milli and micro seconds and all agree. They march confidently and resolutely into the future, one successive number after another, reflecting our can do attitude that the longest journey is made one step at a time. We deny the world's messiness, contradictions and unpredictability.

The clock face is Esperanto, the universal language, seven segment or rotating hands. They're an anchor of certainty.

Clocks don't need us. They set themselves to the universal clock signal or the GPS and they do it without our help. We're too busy to be involved with an 8 day or, heaven forbid, 30 hour movement so we have clocks that drift a second every millennium.

Because we live in an age when synchronizing is occurring on a vaster scale than ever before timelessness is being transformed into time at a faster rate than ever before.

We're synchronizing differently. We no longer share the same experience of time (e.g., the clock tower) on the psychological plane. Now, we share the image of time, instantiated in many ways on our cell phones and watches.

Instead of synching to a communal time, we each synchronize in our own way and to our own device. We don't have the common eating, sleeping and working schedules we did when the sun was synchronizing.

The clock changed dramatically with the industrial revolution, then with the age of specialization. Now there's a new revolution, so it's time for another change.

The next generation of clocks can't be more of the same, but needs to question the mob mentality of ubiquitous precision in all things digital. It must help us unwind our synchronized assumptions about progress so we can move forward in a more soulful and chaotic way.

Clocks must learn to inhabit the digital realm without trying to do what they used to do. Instead they need to reach back to their history as deep

anchors and wow factors.

Some of the directions and influences on the next generation of clocks are in luxury watches, the effect that computers have had on phones, music players and cameras and the rise of mythological thinking.

The watch is a throwback to the past, an actual object, unlike the software that shows the time on a cell phone or a computer. For all the glory we give to ideas and the mind, we are still tangible, physical beings and have a somatic bond with material objects.

The luxury watch is a public statement in a secret language that speaks of economic status, hip-ness and style to others of the same socio economic class. It's part of your outfit, like your shirt and suit. Those who can't afford luxury don't understand the language or syntax and all watches look the same, but for aficionados, the watch is functional art, a conversation piece that can start a number of dialogs.

You can discuss the impulse to mastery and excellence in the way the watch uses precision and miniaturization, two major threads of industrialization. Its multiple displays are opportunities to interpret, explain and compare. The exotic materials of its components are another source of conversation about the beauty of design at the cutting edge of technology.

The clock is more communal than the watch. A watch is on your body, so it's a more personal statement. The clock is in a more communal space so the access doesn't go through one person. More people can look at it simultaneously and share the same experience. We can look at the clock longer and let it seep into a deeper experience because someone doesn't have to reveal their wrist.

The clock isn't portable, so it doesn't speak to as broad an audience. It speaks to people who come to your home or into your office. It's not an introduction, but an elaboration to people who already have an impression of you.

A well dressed person wears a watch, but the idea that an elegant home has a communal clock has disappeared from our mythology because clocks have stopped saying interesting things in a culturally relevant way.

Music, phones and cameras have been profoundly affected by the computers inside. They reinforce our obsession with the immediate. We no longer have to wait until we get home to listen to music or talk on the phone. We don't need to wait an hour for our pictures to be developed. And, since they're digital, we can start snapping immediately without spending any time composing our pictures because we can take as many as we want and discard most of them.

Music and phones have continued our alienation from the communal by giving us new private spaces. We have our own phone so we don't need a family phone. We have our own music player so we don't need a family stereo. They not only perform their traditional tasks, but also organize music and phonebooks into my play lists, my contacts and my favorites.

Computers bring "the time" to all these devices. In addition, we know how long the song's been playing and long it will last, how long we've been on the phone and exactly when the picture was taken. The phone is also an alarm clock.

We make them ours, and not the groups, through personal customization. Ringtones are customized. Screens are customized. The camera has multiple modes that we can configure for our own purposes and save as my camera.

Music players and cell phones also speak to our need for entertainment. We can't walk down the street without a musical distraction and we play games on our cell phones.

Clocks face a kind of paradigm globalization, with the cheap imports coming from the world of digital electronics. Time displays have become commodities.

Although the digital revolution has destroyed clocks' traditional role and caused their identity crisis, it's also a great opportunity. The way to compete is to move up the value chain to a place where simple time displays can't compete and synchronization isn't a primary function.

Clocks that bring back a sense of community and get people more connected with timelessness will tap into a deep need in society and find a strategic niche.

Old clocks naturally created a sense of home and community. They were the only kind of clocks so they got it all. They didn't need awareness because the unbundling hadn't started. The family clock was a hearth and home.

To reclaim that energy, clocks will need to deepen some cultural impulses, challenge others and recast the story of time from the slave of commerce to the mystery of existence.

Paradigm changes take us back to the past as well as into the future. They take us back because we have to relearn what something means. They take us into the future on the currents of history. It's this tension of the opposites that creates something new.

With that idea in mind, I'm trying to build clocks that let people learn to tell time all over again. I'm combining network and systems thinking, ideas about communal customization and theories from Carl Jung to create clock displays that challenge and play with our assumptions about the way time looks.

Play is crucial, because the age of sternness is gone. Clocks don't need to resemble Disneyland, but they will tickle that same funny bone in a different spot. They'll be multi layered, more engaging, fun, amusing and intriguing. Or they'll be ignored.

My clocks, which I call Chronocalsts™, are systems on the network, like everything else in the world of Web 2.0. Network thinking doesn't care about

location, nature or number and changes the clock face from a single design element into a major subsystem.

They have a central computer controlling clock hands and LED digits, each of which I view as a peripheral, so there can be a variable number of design elements in flexible configurations of hands, digits and other forms taking all sorts of shape beyond circles and 1 by 6 rectangles.

One clock might have 3 separate LED displays and another might have one but it's 5 times the size. Peripheral thinking has a well thought out way of dealing with this. A system open to peripherals soon gets many. Why should there be just hands or LEDs? Why should they have to be in pre-conceived places? Why should there be only one second, minute and hour hand?

Clock displays are becoming customized and the trend will accelerate. You can already show multiple time zones on some clocks. Future clocks will let you customize the background (the actual look of the clock case,) what's displayed (New York Time, London Time, Dubai Time,) where it's displayed (the location of the hands and/or the digits) and the format in which it's displayed.

I use a model based on the way word processors let us format paragraphs and characters, but Chronocalsts™ format time. Instead of single or double spacing, it's right side up or upside down or sometimes one or sometimes the other. I use about 10 parameters including options about normal/mirrored, moving/stationary, horizontal/vertical, and you specify whether you always want one or you'd like to see both. Each configuration lasts for a period of time you determine before the computer randomly chooses another configuration that fits within the parameters you specified.

Clocks like this will build community because they occupy a space between the universal and the individual. Because the parameter sets are user defined, the set of time formats will vary from one clock to another. Each

community will be different and sharing a unique characteristic forms a bond. The number of formats in any particular clock requires learning and people will talk to each other about them. The time is an easy ice breaker and a puzzle is a petri dish for conversation.

Although each community is different, they'll all be linked together by the universal nature of time just as geographical communities are all distinct but share a common thread of humanity.

Mythologies are the stories of the collective unconscious. The story is the first horologe. Its progression depended on indicating times during its beginning, middle and end.

The medial age thinks in storylines. There is so much information in the world that we can't organize it as data so we generalize it into stories. The image is front and center in our awareness. Magazine ads are pictures with very few facts. Television commercials seek to bond us to the characters and imagine the products in their stories. Politicians appeal to us with their stories instead of their positions and attack their opponents by painting them as images in stories of deceit and dishonor.

Stories occur at psychological and physical borders because they're about movement from one place to another.

Making decisions about the parameters is telling a story about possibilities. Embedded computers write the sentences about glanceability, flow, rate, synchronization, precision, accuracy and other subjects we take for granted.

Computers let us move clocks from the familiar terrain of assumptions to the border between clocks and not clocks by asking questions about the nature of clocks. They'll open the tangible fact of time to see the stories of the sun god that the original sundials told.

My goal is to implement some of Carl Jung's ideas and reestablish the link

with Psyche's images of time.

I'm approaching time not as a solid entity, but a solution of possibilities similar to the way that DJs combine samples of music into a new composition that gets strength and impact from transitions.

Carl Jung thought of alchemy as the metaphorical language of psyche and I hope to use the alchemical process of *solutio* to loosen and dissolve the preconceptions of time to reveal its golden radiance in much the same way that sampling has loosened and dissolved ideas about music.

Our relationship with time is becoming narrower and narrower. The Industrial Revolution started this process and digital technology has brought us close to a point of no return.

Time and eternity were once connected like the animal and the godhead. We could see the animal (time) and it called down eternity. We experienced this as rituals, occurring at certain times and giving us a glimpse of the eternal gods.

The clock pulse is way sharper than a razor and has sliced and diced timelessness out of our lives

Rituals have changed. We may have rituals like a morning cup of coffee or a TV show but we don't use them to see timelessness. We use them to see consumer gods and the brand's eternity (which will hopefully last as long as the payment plan.)

Timelessness is an old growth forest that we're harvesting too fast. We need to reintroduce the mystery that is time. The same digital paradigm that has built the frenetic world in which we live can also slow it down.

The embedded systems clock will be as different from the precise clock as the mechanical clock was different from the water clock.

a&e | ART FEATURE

Killing Time

S.B.'s Bob Roan and His Unconventional Clocks

by Elizabeth Schwyzer

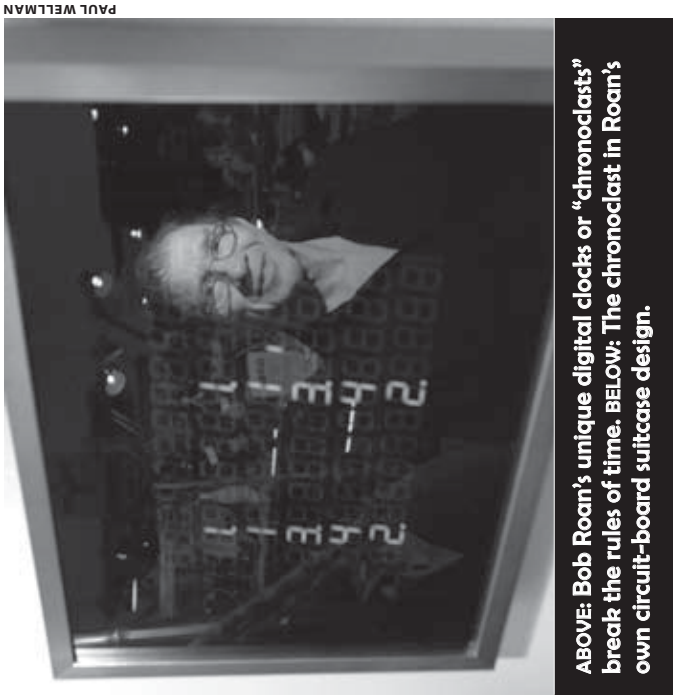
It's just after 10 a.m. on a Thursday morning—at least, I think it is. I'm standing in the spacious home office of a tract house in Hidden Valley, trying to tell time from the most unusual clock face I've ever seen.

For some people, time is a serious matter not to be trifled with. For Bob Roan, it's more of a game. Roan is a longtime Santa Barbara resident, a computer programmer, and physicist with a metaphysical bent. Three years ago, he completed a master's degree in mythological studies at Pacifica Graduate Institute. "I planned to do a PhD, but I got kind of consumed with this," he explained, gesturing to the circuit boards, computer monitors, cables, and cardboard boxes that fill his office. By "this," he means his growing fascination with the concept of time, and the creation of a series of digital clocks that toy with the viewer by obscuring the actual time as well as raise questions about our dependence on it.

Roan considers himself primarily an ideas man—an intellectual rather than an artist—but he's also selling four models of his clocks at a number of venues in Los Angeles as well as at Santa Barbara's seasonal Yes Store, this year located at the old site of Morningglory Music on State Street. Although the clocks themselves are Roan's original work, down to the hand-soldered circuits, he commissioned three of the four cases they are housed in: the sleek, brushed steel frame was designed by Caruso Woods; the traditional alder wood one is the work of Kestas Urbaitas; and Blaine Taylor crafted the chic zebra wood version. The fourth design is the most lighthearted. It's made of green circuit boards with a briefcase handle set at an angle on top, and Roan designed it himself.

"I think they're great conversation pieces," Roan explained, swiveling one of the clocks around to show me its inner workings, including a small screen, a couple of buttons, and a series of program settings where the user can determine just how confusing to let things become. "They are clocks for people who like puzzles, new technology, and new ideas," Roan continued. He laughed as he recalled one customer at the Yes Store who complained that the clocks made him "think too hard." "They're for people who actually *like* to think," Roan said, giggling.

Unlike the average digital readout on your bedside alarm clock, Roan's creations can be set to read out the time in a vertical orientation, upside down, or diagonally. You can specify how long you want it to remain in each display mode, and whether you want the transitions to dissolve or switch immediately. For every programming decision, there are three settings to choose from: sometimes, always, and never. And Roan's clocks even give you the option of seeing the "regular" time once in a while, just to keep you clued in to the little game.



ABOVE: Bob Roan's unique digital clocks or "chronoclasts" break the rules of time. BELOW: The chronoclast in Roan's own circuit-board suitcase design.

"The clock face is sort of the Esperanto of the world," Roan said. "I've tried to take that thing that is so universal and shake it up." His studies at Pacifica, where depth psychology and mythology are the primary models for understanding the world, have obviously influenced his thinking. "I think we really need to disrupt the way we're so synchronized, the way we're so dependent on the clock," he explained, "so I've dissolved the clock face into something you can't take for granted. My clocks take the familiar and make it unfamiliar. According to depth psychology, that place where you're confused is where the good stuff happens."

Yes, it's a game, but for Roan, the implications of such a disruption to our thinking go beyond mere play; he calls his clocks "metaphysically green." "We're so diminished by schedules," he said. "We're so locked into what seems immediate, but we zip through it; we have too much time, and not enough timelessness." Roan cites large-scale issues like global warming as a function of our inability to see our impact on the world in deep time rather than in the short term. He acknowledges that the problem is bigger than he can take on alone, but he'd like to think his clocks might contribute to our ability to slow down and consider the grip time has on us. "I call my clocks 'Chronoclasts'; I'm breaking the rules with time," he said. "Hopefully they can bring people into the moment."

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Bob Roan's clocks are on view at the Yes Store (1014 State St.) now through Christmas. For more information, call 624-6356 or visit spacetimeartworks.com.

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