A SYSTEM THAT WORKS: BUILDING A DECENTRALIZED GLOBAL POLITICAL ECONOMY USING THE VIABLE SYSTEM MODEL

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ABSTRACT

A political economy that enhances personal freedom requires effective but limited regulation. The Viable System Model by Stafford Beer offers a way to analyze an organization's communication problems, maximize resource use, minimize waste, and adapt to a changing environment by clarifying what to regulate. Jon Walker's "VSM Quick Guide" and Allenna Leonard's "Personal VSM" ground the reader. VSM is applied to a community of 65,000 people in Davis, California, USA, in a way that could be used in other places around the world, to help identify strategies to better meet human needs, enhance the local economy, reduce environmental damage, and encourage natural healing processes. Given the recursive nature of the VSM, this method could be used at every level from person to family/neighborhood/village/community/ district/ region/ state/nation/continent/planet, emphasizing the system in focus. "National Government: disseminated regulation in real time, or 'How to run a country'" by Stafford Beer describes how to construct "quantified flow charts" to identify which statistics to measure daily as regulation at a particular level of recursion.

REDEFINING THE SOCIAL CONTRACT

When someone says "bureaucracy," you probably think – delay, confusion, even obstruction.

What if we could eliminate MOST of the organizational confusion – just disappear it – along with half the bureaucracy itself?

THAT is the claim of this paper: A 1950s British scientific discovery that precipitates a complete revolution in social science as we know it. The basic idea is to replace the organization chart with a layered mapping structure that allows people to assign responsibility, clarify who has decision taking responsibility WHERE, and then creates a way to daily report only information that matters at that point in time. By looking at organizations as nested layers, or recursions, people can debate a particular "system-in-focus," especially about its decision making and enhancing its potential.

This method, called The Viable System Model (VSM) by its creator, Stafford Beer, cuts through the need for most of the organizational obstacles that 20th century Managerial mythological theology defines as reality. "Theory is the only reality countenanced by our culture" is Stafford's most significant criticism of the Western ethic with a busted gut. In 1972, Stafford was the President of what has become the

International Society for the Systems Sciences, and this paper builds directly on his Presidential address (which is included in *Platform for Change*).

We have a mixed economy. The 20th century was about private businesses buying almost whatever they wanted, with big government failing to regulate environmental problems, and social problems becoming a consequence of too much regulation.

One of the fundamental characteristics of a period when a society is approaching a revolutionary change in thinking, according to Thomas Kuhn, is the high degree of conflict and disagreement about conventions, as is reflected now in the extreme partisan conflict in U.S. national politics. This VSM analysis disappears most of the differences between the Republicans and the Democrats. Things quickly change: to the defenders of the obsolete status quo, and the people who recognize that change has already happened.

As Stafford Beer says in *Platform for Change*, "When the traffic on the roads finally goes mad, disobeying all the regulations that no longer contain it, I shall be risking my neck in there trying to measure things, trying to make a model of the new situation, devising a cybernetic control system that just might work if the authorities dare to listen."

This paper is an effort to help build the bridge to a healthy 21st century.

THE VIABLE SYSTEM MODEL

Jon Walker's Quick Guide to VSM

URL: http://www.esrad.org.uk/resources/vsmg_3/screen.php?page=introduction

http://www.esrad.org.uk/resources/vsmg_3/screen.php?page=1qguide is the following 4 pages

STAFFORD BEER: ORGANIZATIONAL EVOLUTION

VSM is an example of a systems approach to looking at the world. In the local Davis parlance, an ecological approach: to see a system with subsystems, in an actively changing environment; static structures are temporary. Stafford's ideas are as revolutionary/evolutionary as Darwin's.

Before Stafford Beer: Organizations thought of in terms of static organization charts with hierarchical bureaucracies, many layers of administration, TOP down decision taking, with built-in confusions of communication and control that lead to built-in conflicts.

Stafford Beer: All organizations that continue to exist have a part that does something in the world, and a second part that looks at how the environment is changing and what the organization should do in the future. The Viable System Model identifies the necessary and sufficient information flow that an organization needs to adapt over time; the model can be used to help an existing organization identify areas where communication is breaking down, and design new communication structures to accomplish new goals; all workers share access to manager's reports, which are designed in a way that empowers

all to participate in debate about what the numbers mean, what the policy options are, and what direction the organization should point new efforts towards. It shifts the focus of organizational power down from "the Boss" to the operations level, with the emphasis of management shifted to being in service to operations.

DESIGNING FREEDOM

One mind-boggling idea in this paper is that it might be possible to come up with a new metric – a measure – of a higher good than money.

What. Is it possible? The concept that Stafford offers (yes, it is integral to the VSM) is

Eudemony.

Huh? It is Greek, and was invented as a word by Aristotle. It means "well-being". The concept is that money is a constraint and Eudemony measures something positive.

Eudemony is one of the foundations of VSM, so it will take on more meaning as you come to understand how the performance measures are defined so that you can identify incipient instability and maximize the potential for a positive intervention before it is too late.

Stafford gave a series of radio talks about these ideas on Canadian Broadcasting that was published as a book, called *Designing Freedom*. One of his points is that western society has become so overwhelmed with miniscule regulations that we have lost control of our own freedom. And, we don't seem to know what freedom means any more. That is why the U.S. Tea Partiers can simultaneously demand to keep their rights while preventing other rights to people they object to.

Looking at Davis through the Viable System Model, Jon Li, Davis Enterprise 2/7/10

Institutions that run our lives have notoriously poor information flow. We label inefficient and unresponsive organizations "bureaucracy," implying incompetency is the standard.

The Viable System Model offers a way to see through some of these organizational complications. VSM was developed in the 1950s in a steel mill in Great Britain by Stafford Beer. The model produces hundreds of recommendations about communications improvements. Three months after it was implemented, the mill had a 30% improvement in productivity. Its applications range from a honey bee hive to 75 percent of the social economy of a nation (which took 12 layers of analysis). For the Davis community, there might be 8 or 9 layers.

Basically, the Viable System Model creates a graphic distinction of how an organization communicates and decides. The most obvious conclusion is that most organizations focus on their day to day operations and tend to ignore the need to coordinate the different sections of the organization, neglect communication about how their environment is changing, and disregard how the future might be different than expected.

The Viable System Model defines a viable system as an entity that has an ongoing impact in a dynamic environment and maintains its identity as change happens in its environment. (See the Viable System Model diagram.)

For the "System in Focus," identify several things it does in the world, each of which is represented in the model by a circle. For each circle, the VSM requires 5 management systems as necessary and sufficient for the circle to maintain its viability: System 1: the day to day operations of the circle; System 2: the ongoing coordination of the circles; System 3: the long range resource bargaining with the larger organization and between the circles ("inside and now"); System 4: exploring the changing environment and anticipating future potentialities ("outside and future"); System 5 is the visionary mediation between 3 (the present) & 4 (the future).

The problem is that most organization's management behavior focuses on the 1-2-3 relationship and ignores the 3-4-5 communication. Too often, organizations focus on getting better and better at what they do, and ignore the always-changing environment, often until it is too late. This is called “collapsing the 3-4-5,” and it is the most common reason why businesses fail – they don’t see the need to adapt to a changing environment.

The VSM analysis allows one to step outside the box limited to traditional thinking about particular inter-relationships. One of the basic concepts of VSM is recursion: that viable systems are nested in viable systems. What is dynamic at one level of analysis is static at the next level up, and perhaps irrelevant at the next level down. So we can pick and choose within the model what variables should be measured, managed and evaluated at that particular level of organization.

Recursion applied: As you look at the diagram, the medium sized boxes are the Systems ONE, THREE, FOUR and FIVE of the "System in Focus". (System TWO is the anti-oscillatory triangle symbol.) Within the circle of the System ONE are two very small circles and small System 1 boxes connected to the larger circle's System ONE box which includes the small circles' 2-3-4-5s, all of which is the next recursion down. And, the medium size boxes THREE-FOUR-FIVE that make up the upper right of the diagram are enclosed in a large box, which is the System 1 for a larger recursion in the environment of which this "System in Focus" is one of the circles.

Bottom Line on VSM:

-identify 8-12 sensitive indicator limits which are defined

-measure the key indicators daily

-if they go outside of an acceptable range, they are reported up to the next level

-maximize local autonomy

Davis Now

We are building the VSM for the Davis community. Since the UCD campus is such an integral part of the community, we are doing a partial VSM analysis of the campus as well.

To find out more about the Viable System Model, the best introduction is Jon Walker's Guide to the VSM which is available on the web, URL: http://www.esrad.org.uk/resources/vsmg_3/screen.php?page=introduction

The goal of using the VSM process is to identify information bottlenecks and repair them in a way that improves decision processes.

Jon Li is a long time Davis resident.

To Change Ourselves: a Personal VSM Application by Allenna Leonard http://allennaleonard.com/PersVSM.html

Personal Viable Systems Model
System 1
System 2
System 3
System 3*
System 4
System 5
Other Stages and Ages
A Matter of Perspective
Conclusion
References

Introduction: The Personal VSM

If one wishes to change the world, one must first change oneself.

What follows is an example of a VSM of an individual's life. It is a setting that everyone can relate to and that is useful as a self-referential tool. One's life is also an example that provides illustrations of how some of the same activities may fulfill different functions in different people's lives, or in the same people's lives at different times.

System One

System One activities are operations that do something that is rewarded by the environment, usually products or services in the case of a business. On the individual level, it could be paid work, but it could also be unpaid work, schooling, a hobby or care-giving.

Our subject is a full-time student in a university. She is taking four classes, so each of them is a System One activity at the next lower level of recursion. She has an athletic scholarship, so playing her sport on the University team is also a System One activity. In this, she differs from her roommate who plays sports on an intramural team to relax and stay in shape. For her, her sport is not a System One activity although her part-time job is. Her classmates may count as System One activities their volunteer work, student government, care of a child, or network building in the context of their social life, if it is pursued in a purposeful and organized manner. The test is 'is the activity an exchange in the environment that produces something that the environment recognizes and rewards?' If so, it is a System One. It is connected to other System One activities and may conflict

with them, or at least not take advantage of synergy if they are not viewed from a broader perspective.

System Two

The first problem that arises is that the System One activities may get in one another's way, causing oscillations whereby the individual scrambles to deal with schedule glitches, budget disruptions and problems with enabling infrastructure – computers and other tools that help keep things in order.

System Two is a service to the System One activities to help them run smoothly. So, our System Two tools are likely to include: our diaries or planners, our address books, our checkbooks, filing systems, instruction manuals for our tools, training or certifications that need to be renewed – even the alarm clocks and tickler files that tell us it is time to move. And, of course, there are the System Two activities that go with being human: our habits, eating, health and fitness, grooming, rest and relaxation.

Students, as part of the recursion 'university', adopt a number of System Two conventions that relate to expected behavior in class, standards for papers and other assignments and social relations. Forms of address, style manuals, requirements for using university computer centers and dormitory rules are examples.

System Three

System Three makes inside and now executive decisions on the basis of the circumstances of all the System One activities together. It looks for synergy and makes adjustments to deal with priorities and shift resources to adapt to changing conditions. The 'resource bargain' with the System One activities allocates time, money, space and other resources among the student's different classes and between classes and other commitments. A field trip or big project in one class, for instance, might use study time and perhaps class time normally allocated to the other classes. Or, the demands of a tournament, a big push in a part time job or student government event could result in shuffling schedules and perhaps scrambling to get everything done. Everyone does this sort of trade-off anyway, with or without the benefit of a model, but having a model makes what is included in the considerations more explicit.

Often System Three decisions are made on the run. Something more or less unexpected happens and it is necessary to reallocate priorities and resources. This is not so different from when a company shifts gears to comply with a larger than normal order or to compensate for a breakdown. When there is time for consideration, synergies may be pursued. Two different courses may have overlapping reading lists, allowing for a deeper understanding of how they apply to both of them, or two courses may be scheduled consecutively in nearby buildings, thus saving travel time.

System Three Star

System Three Star mops up excess variety that is not handled by regular arrangements. Any sitting down and taking stock of particulars counts as a Three Star effort. Sitting down with one's budget is the obvious parallel to the financial audit of a company but there can be others, such as measuring your computer capacity against current demands

or looking at whether your transportation arrangements are satisfactory. Some external evaluations such as one's yearly physical examination or the university's periodic review of eligibility for maintaining scholarship status are also Three Star activities.

System Four

System Four for the university student may seem to be the whole effort as education for one's future life is almost by definition a System Four activity. However, while at university, there are needs to focus on the short and medium term future, i.e. this week and its demands, as compared to next semester.

System Four contains a model of itself and the connections it has to the relevant future environment as well as a model of the VSM structure of which it is a part. The internal conversations within System Four between different aspects of these two models can be very enlightening. The student, operating in System Four, may select a possible alternative from the environment, say, a new course for the next term. He or she would first consider this potential course according to its System Five criteria for computability with identity and overall goals. If there was no conflict, a System Three feasibility check would be made and its relations with other courses and commitments considered. Lastly, he or she would look at whether any changes would be needed in the System Two support structure, such as additional software, to accommodate this new initiative.

System Five

System Five maintains identity and coherence whether we are a student, a member of a community or member of an organization. All of us have different aspects of our identity that we may stress at different times or in different contexts. These aspects may differ when the same 'identity' finds itself in a different context. Although there is wide variation, students almost inevitably broaden their contexts when they attend university, whether they have traveled five miles or five thousand miles to attend. New ideas, people with different outlooks and people from other countries are encountered and these experiences become part of the student's growth and emerging identity.

The other function of System Five is to balance present and future efforts and emphasis. This aspect typically shifts during a university program. At the beginning, the emphasis is mostly on the present; learning the new routines, figuring out the new expectations and meeting day to day obligations. One day at a time is not an unusual orientation during the first weeks. After one has settled in, it is possible to look around, perhaps even stop and smell the roses, and think of next steps. As the student gets closer to the completion of the program, more thought is given to the future.

System Five may consider different potential shifts in identity to explore ways of changing ourselves so we may change the world. Our identities are made up of many aspects. Indeed, 'identity politics' would seem to reduce each of us to our race or ethnicity, our age, our gender, our religion, our class or our party affiliation. We are certainly all these things, but we are also an unfragmented whole with the integrity of a persistent personality with its combined influences of nature, nurture and choice.

Other Stages and Ages

Although many who learn the VSM are students, there are many possibilities for individual VSM workshops for others. One popular area of concern in North America is 'work/life balance'. It was a major topic at a recent HR Conference I attended this fall. Although it is a track that attracts many women juggling their work and families, it applies to men with family responsibilities as well. Even at the domestic level of attention one finds choices that involve Systems One through Five, such as the System Three resource bargain of whether the time saved by using processed foods is worth the increased risk of additives and the likelihood of decreased taste and higher cost. They are performed in the System One here and now, supported by shopping and food storage practices in System Two, evaluated according to their future implications and related to one's identity. Consumer choices and ad hoc adaptations to change made individually, do 'change the world' as we 'vote with our feet'.

Another group of people who might find use for the personal VSM are the large number of free-lancers, contract workers and others who must manage their 'Me, Inc.' according to variables not faced by those with permanent employment. They have different types of contracts and perhaps other claims on their time as their System One activities. They must maintain their contact lists, billing and record-keeping arrangements and technological infrastructure in System Two. Decisions and resource bargains are made in System Three and evaluated in System Three Star. They anticipate the new knowledge and practices they should be acquiring and take steps to direct their learning, attend conferences and keep up with their fields in System Four. In System Five, they take the long view and reflect on how everything fits together. And, perhaps most usefully, they may consider themselves in the context of all the different Systems of which they are a System One – their families, their colleagues, their communities, and so on. The comparisons made between a personal VSM of oneself as a member of a family and as a member of a work group or other affiliation can be very enlightening – illustrating connections, relations and conversations that may be compatible or in conflict.

A Matter of Perspective

It has been mentioned earlier that the same activity may be, depending on the individual, part of a different System. For example, for one person physical exercise is a System One. That person may play on a team, or participate in an individual sport, as 'semi-professional', such as the students on athletic scholarships in the United States college teams or anyone for whom this hobby is seen as something done for a reward. Another person may exercise or play a sport to maintain physical fitness so that they are equal to the expected demands on their strength and energy, which is a System Two function. In a System Four context, one may pursue exercise to prepare for a marathon or another test of endurance. For another, sport and physicality are part of their identity – of who they are. This is System Five.

Among people who meditate seriously, all five systems are addressed by different uses of meditation. It may be an activity that one performs to benefit the larger environment – System One. It may function as a System Two maintaining balance among different aspects of one's life. It may be the means used to address decisions about the here and now and the resource bargains made among different System One's – a System Three

function. A meditative retreat may serve as a variety mop up in System Three Star. One may meditate on the future, acting in a System Four capacity or may reflect on questions of identity or the balance between present and future in System Five.

CONCLUSION

Beginning to learn to apply the VSM to an individual's life and work is a very useful way to come to grips with the model without the benefit of a common organizational context. It is advantageous that an individual does not need much familiarity with the management of organizations to proceed. And, of course, it is hoped that when similar dynamics are met in the context of organizations and their relations, that the invariances will be recognized.

For more from Allenna Leonard about how to apply VSM:

A Viable System Model: Consideration of Knowledge Management, Journal of Knowledge Management Practice (1999)

The VSM Applied to Complex Organizations in Crisis, Address to the 2nd Cwarel Isaf Institute Conference, Internet

Preliminary VSM maps for:

A variety of important parts of a community (in this case Davis California, USA), in each particular system in focus, describing the environment, and the subsystems (referred to as System 1s).

VSM: Davis Community as System in Focus:

Environment: UCD, Davis School District, Yolo County, Sacramento Area Council of Governments (cities in adjacent counties are all members), Solano County and the Association of Bay Area Governments (ABAG), League of Cities, State of California, special districts such as air, transportation and mosquito abatement, Sacramento regional economy, Central Valley ecology

The system 1s: residents (families, preschool, K-12, seniors; college students who are not in any way related to the previous groups); businesses; City of Davis (parks, utilities - water, sewer, drainage, administration - police, fire, finance)

System in Focus statement of purpose:

Davis is a residential community, adjacent to the University of California campus, surrounded by agricultural land, good schools and parks, an environmental self-image, a

small business sector, connected to the Sacramento-San Francisco corridor by freeway and train, many commuters, and a bicycle for the city's logo.

Having the City of Davis as the system in focus does not seem right. I believe parts of it should be one recursion down, and other parts of it are system 2 or system 3 in the larger community, as near as I can tell.

VSM: UCD as the System in Focus:

Environment: every child in California, California taxpayers, 12.5% of the high school graduates in the state, students at community colleges and state colleges, anyone on the planet who might be impacted by discovery or policy developed by people associated with this campus.

UC Office of the President (UCOP), Regents of the University of California, state legislature, CA Department of Finance, CA Department of Food & Agriculture, California Postsecondary Education Commission (which administers the state Master Plan for Higher Education)

current UC students, faculty, researchers, faculty on other campuses

businesses with a research agenda, agricultural industry, US Department of Agriculture, national and international agricultural economic networks - like IRRI, the International Rice Research Institute which is headquartered in the Philippines and has more associations with UCD than any other campus; US Department of Interior, Defense, Transportation, HHS, the entire medical system

Putah Creek/Sacramento River watershed

City of Davis, Yolo County, Sacramento Area Council of Governments - all cities and counties in the region

Davis Joint Unified School District, every school district in the Sacramento region, every school district in Northern California, every school district in Southern California.

Rest of the University of California, California State Colleges & Universities, Community Colleges, private colleges in California, land grant colleges in the U.S., institutions of higher learning around the world.

System 1s;

agriculture, environmental science, engineering, veterinary medicine, human medicine and nursing, law, letters and science, and, 60% of the student body: biological sciences.

VSM: A family with four children in middle school

Environment

Close: citywide economy; high school (future); city parks & fields; Harper Jr High; South Davis Safeway Shopping Center; Willowbank Neighborhood

Far: Sacramento region, San Francisco region, Boston, Rochester NY, Rome

The immediate environment is shared, and can be a useful analysis in a different direction. House, animals, vehicles, City of Davis, resources for people with special needs (in a way that "girl1" is a part of the family so much that she is a full-time reality that is part of everyone's assumed shared environment - "we wouldn't even consider going someplace that didn't accommodate girl1.")

System 2 & System 3 is Mom & Dad.

System 4 is: boy, girl1, girl2, girl3, classmates...

System 5 is Mom.

common subsystems: Academic; Nutrition; Exercise/Athletics; Social

The "girl1" sub-subsystems apply to each person; by using "girl1" as the standard, it is clear that the others have just as many different kinds of challenges.

7th grade girl, quadriplegic

-Academic: verbal skills, thought skills, math skills, classroom achievement, individual learning

- Nutrition: short term (immediate changes); long term behavior

- Exercise/Athletics: manual skill levels; performance standards, goals for 3-6 months

- Social: communication skills, relationships

7th grade girl, soccer: Academic; Nutrition; Exercise/Athletics; Social

7th grade girl, gymnastics: Academic; Nutrition; Exercise/Athletics; Social

9th grade boy, line backer, defensive team captain: Academic; Nutrition; Exercise/Athletics; Social

mom

dad

The point is, within each person's subsystems are benchmarks, standards, and personal best goals. I am a big fan of Management by Objectives: time limited goals that are quantifiable; three months seems like a good medium or even long term goal point to work towards.

Isolated Senior

How is this different than a younger person?

System 1s: income, housing, food & shopping, recreation, health care needs (exercise, primary physician, care giver, ancillary health support staff, specific equipment, pharmaceuticals), social support (connection to the Senior Center and other community services), transportation (personal: walk, bike, car; public), resource management.

VSM: The Local Economy

The environment is defined in "Davis community as system in focus" above.

There are different ways of creating System 1s. The most obvious is geographic, with ten obvious shopping/business communities of up to 10,000 people: from the west, Stonegate, Marketplace, Anderson, University Mall, Downtown, Southwest, Popsicle, Nugget, North Mace 80, South Nugget.

Another is by function, and there are other synergies to be found within these: retail, professional, business support, export, agricultural, production. A large group of UCD graduates flow into the professional world.

VSM: The daily newspaper

Environment: changing news in the world; potential subscribers; potential advertisers;

competition: (print) Aggie, Sacramento Bee, Woodland Daily Democrat; (electronic) Vanguard, daviswiki, Craig's List, sacbee.com

System 1s: News: sports (youth, high school, college, regional and national), city, campus, county, features (columnists: Bob Dunning, Darrick Bang!, Marion Franck, Debora DeAngelo, Rich Rifkin), editorial support; advertising; production; delivery (home, rural, newsracks, online)

VSM: the Davis Food Co-op

Environment: international co-operative movement, National Co-op Grocers Association, United Natural Foods distribution – Western region, Sacramento regional economy, Davis economy, UCD

System 1s:

DELI: meat: beef, pork, chicken, processed food;

bakery: baking, vendor product;

deli: hot food bar, cold food bar, grab and go, sushi,

services (coffee drinks, sandwiches, custom packaging)

DAIRY: fluid milk; cheese

GROCERY: bulk, beer, wine, dry grocery, frozen product

WELLNESS: supplements, books and cards, body care, general merchandise

PRODUCE: organic and conventional, live plants, olive bar

"Start a business" map

This map has a horseshoe on the left, and a circle on the right.

The horseshoe has the open end at the top, and the right side connects to the circle.

The beginning of the horseshoe is: you get a good idea to start a business. The right side of the top of the horseshoe is you open your business. What are the steps to get around the horseshoe?

The circle is the annual cycle of your successful, thriving business. Three quarters of the way around the circle is the end of your fiscal year, and the end of the circle is when you file your completed taxes, and you are well into your next fiscal year.

This Steps and Ladders board game of the Successful Business is negotiated annually between city economic development staff, the Chamber of Commerce and the Downtown Business Association.

Business ideas?

For starters, walk into a large drug type multipurpose store, and look at one shelf that you could focus on so well that you could make a retail business out of it. Get to know everything there is to know about how that product or service works, the retail public face, and then all the jobs that go into putting the product together and to the final consumer.

Examples? Somewhere in the population of 5,000, most places, or a nearby place would have: art store, art studio, art gallery (Davis shines), crafts supply, athletic supply store, automobile parts store, barber shop, bathroom and plumbing accessories store,

beauty salon, used book store, bike and bike repair, bowling alley, building supply, cafeteria, candy store, card and gift shop, catalogue and outlet store, stationary, party goods, copy shop, carpet shop/rugs, convenience store, craft and hobby shop, discount department store, drug store, dry cleaners, electrical supply store, exercise salon, eye care and optical dispenser, fabric store, frame shop, athletic club, seamstress, factory outlet, motorcycle, mopeds, import store, pool hall, restaurant, financial institution – branch, floral shop, flea market, recycle center, furniture store, gasoline service station, home improvement center, hosiery, household accessory, ice cream/goodies, ice skating, jewelry, travel, kitchen cabinet store, kitchen supply, lawn and garden, lawnmower repair and sales, linen shop, lock and key, luggage, maternity wear, muffler, music (records, tapes, video), music instruments, nursery, nutrition or health, oil change, paint store, office supplies, pet supply, photographic equipment, photographic studio, ranch and farm supply, real estate, repair, grocery, shoes, specialty food, specialty clothing, boutiques, sporting goods, tv sales and repair, theater, tire and automotive, toys, games, upholstery, dental, computer, day care, campground, youth hostel, Laundromat, juice bar, hair saloon.

VSM was designed to improve a business. William Christopher, in *Holistic Management*: "How can all company actions be coordinated and motivated to achieve success in creating and keeping customers? VSM can help. To achieve the company's targeted goals requires excellence in all of Peter Drucker's key performance areas: creating and keeping customers, quality and productivity, innovation, organization capability, physical and financial resources, public and environmental responsibility, and profitability. Plus, excellence in using VSM communication channels internally for managing operations, and externally for customer service, and for dealing with constraints and threats, and discovering opportunities in environmental change. VSM doesn't so much change the company as change the way people think about the company".

<u>How VSM might play out in Davis (part 2)</u>

1. City Manager designs a process for council and staff management of a staff VSM process, 7/10
2. The Davis City Council decides to implement the VSM, 7/10
3. City staff reads Jon Walker's "Guide to VSM," Allenna Leonard's "Personal VSM," and Stafford Beer's "How to Run a Country" (most of which is in this paper)
4. Structured discussion within each city department about what VSM might look like in their department, within preliminary City model initially presented by the City Manager, 8/10
5. City Manager presents staff findings 9/10
6. Public reaction for three months

7. in January, Jon Walker and Angela Espinosa come to Davis for a week of public workshops in the evenings and city staff workshops in the afternoons. Angela and Jon arrive on a Monday, address the City Council on Tuesday for a half hour of question and answer, lead a scheduled workshop for the Planning Commission on Wednesday, and then focused public workshops at the Veteran's Memorial Center Multi-Purpose Room, Thursday evening, Saturday afternoon, and Monday evening, with the material evolving with each workshop. On Tuesday, present the results to the Davis City Council
8. which are recommendations for inquiry and potential reorganization of the city government, and potential changes to the city's economy.
9. These changes might well include a policy governance alternative to the current state mandated general plan, a 3-5 page document of specific performance standards to replace the hundreds of pages of city general plan regulations.
10. And, becoming a charter city with its own, limited governing document to replace most state regulations.

Global Transformation: Other jurisdictions, at all levels of government up to and including the United Nations need to shift into the 21st century. Replace useless regulations with 8-12 key daily statistics, and eliminate the need for half the bureaucracy. VSM can help you do it. This is from ISSS President-elect Allenna Leonard's incoming speech, "Advancing Viable Governance":

"I would suggest that the Viable System Model could again be applied to monitor and report on the management of critical variables in the social economy and the natural environment. We might ask what measures would be analogous to temperature and blood pressure in the human body that would provide requisite variety? Such a VSM would not arrive full-blown, but it could be outlined and made widely available even at an early stage of development. A Syntegration – in other words, a planning process that's designed to bring requisite variety to bear on a question – or other group process – could set the stage.

"It might well be possible to put up qualitative if not quantitative flow charts to identify indices to populate a basic Viable System Model for each community at several levels of recursion. People or groups could be invited to fill in the blanks describing the current state of affairs as they know them. Members of the public could contribute their local knowledge, ask questions, identify anomalies – or simply add their perspectives.

"Since the VSM typically identifies around ten indices per recursion, the design requires hard thinking but running it is easier. A key is to think in real time".

Following the References, is the Appendix, where Stafford explains how it works together.

For more about the decentralized global information network, see:

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Appendix: Stafford Beer's How to Run a Country

Stafford Beer's Viable System Model: looking at what is actually happening, identifying key areas for action, and then trying to determine if the intervention had the intended impact on the environment – not based on partisan rhetoric, but on pragmatic results. Every living system has sub-systems which are surviving in a natural environment. The subsystems must be coordinated and their resources balanced, and the system must be able to adapt to a changing environment to be sustainable, over time.

The real world test of this idea was in 1972-3, in Chile. Stafford was recruited by the economists in Salvador Allende's administration to apply the Viable System Model to what became 75% of the country's economy. Each of the major sectors of the economy was mapped, and their production flows monitored on a daily basis, with the information given to the manager, supervising foremen, and workers, for review and discussion about improvement. During the six week Chilean truck strike, with only 20% of the trucks available, using real time information and just in time scheduling and coordinating, essential resources were successfully distributed to meet basic needs throughout the society. The Viable System Model is designed to identify reality, rather than confirm theory.

Describing how it would look

The following is from "National Government: disseminated regulation in real time, or 'How to run a country'" by Stafford Beer.

Introduction: The approach of managerial cybernetics to the regulation of large, complicated, probabilistic systems is based on a number of assumptions which apply to the organization of government, to the organization of enterprises that generate the national income, and to the organization of the human communities that constitute the nation itself. All of the systems have a powerful investment in their own identity. Each seeks to define its identity, to maintain it, to flourish out of a commitment to itself and a confidence in its selfhood. Each has an organization whose primary purpose is to preserve identity – in a word, to survive. Survival, moreover, is not a concept of stasis. Identity must change – and be gradually modified – as the world changes (it is called adaptation); otherwise there will be no survival.

For example, a democratic government, in order to survive, must renew its political mandate at the polls; a dictatorship must instead restrain the exuberance of the people. Enterprises must make a profit, or they will not survive. Communities must find ways to survive in balancing their books – between local and federal taxes, between remunerated and voluntary effort, between recreation and rip-off.

Survival is a function of the total organization of any system that does survive, and includes its capacity to learn, to adapt, to evolve. A system that does all these things is called a viable system. The assumptions referred to at the start are the natural 'laws' of any viable system.

The recursive structure of the Viable System Model: The first demonstration of the VSM is that all viable systems contain viable systems, which are themselves of identical cybernetic organization to the totality and which are largely autonomous. Thus in government, Education for example contains primary, secondary and tertiary components. In Enterprises, the holding company may have largely autonomous operating divisions, and they in turn largely autonomous companies or plants. In the largely autonomous provinces or states of the Nation, there are largely autonomous cities, each having largely autonomous fire and police departments.

In VSM parlance, a drawing of a level of an organization shows the relationship between one layer and the next layer down. 'Down' itself refers simply to organizational containment: the VSM is not essentially hierarchical, it is essentially an interaction of subsystems. It is for pictorial and not for logical reasons that the VSM draws only one pair of recursions at a time. However, every component and every connection to be found in the total picture stand at 45 degrees to the main axes, as will the connections between each of the subsystems across the two recursions. It is this mathematical property (called isomorphism) that entitles us to talk about 'laws' of the viable system.

Now if we were to enquire into these three major organizations by asking them for their 'organization charts', covering every level of recursion, we should find that we had hundreds of charts, each as idiosyncratic as the 'family tree' of some noble lineage. Such presentations are without coherence. Any one chart of any one large organization, if reproduced entire, would cover the whole side of the multi-story edifice housing the enterprise, and no one would be able to review its viability. But if all such charts are mapped on to the standard model – the VSM – this becomes possible, severally, and also in interlocking recursions.

The practical approach: The mapping of actual organizations on to the VSM is a matter both of cybernetic technique and of profound knowledge about the particular organization under study. Thus any given investigatory team must meld together cyberneticians with local people.

Consider now a practical example of what would happen. The constitutional regulatory system of the Nation is Recursion One. This includes (Recursion Two) ministerial government, communities, and the wealth-producing industries, public and private. Select industries, which includes (Recursion Three) Water Supply, Energy, etc. Recursion Four of Energy includes the viable systems of Oil, Gas, Electricity, etc. A VSM team will need to map each of these industries on to the VSM, and in doing so to visit each of the component companies or plants of each: that will be to map at Recursion Five.

The level of complexity may sound alarming. It is not. In the first place, the multiplicity of basic activities encountered across the country have to be managed in any case, and have to be incorporated into the governmental perception of the national weal in any case. The cybernetic approach is already making matters easier in two ways.

First, by using the same model, the same regulatory language, and the same information technology across the board, it becomes easier to synthesize a view of what is really happening throughout the nation. Second, because the recursions are richly interconnected, inside each other, models of the higher-order recursion can rapidly be integrated once the basic systems have been mapped. In managerial cybernetics, the VSM is passing to-and-fro among the encapsulating recursions not merely numbers, but Gestalten – whole and integrated patterns – of viability.

With conventional organization chart thinking, people 'higher up' take plenty of credit, because they are 'organizing' things. Plenty of costly effort is put into massaging the basic data so that this 'organizing' of things is manifestly justified. All of this glossy activity creates the illusion that each level produces. Of course it does not. What it does, if it is effective, is to generate a measure of added-value, deriving from the informational energy of synoptic vision. Even then, things are fine only so long as the basic operations do well; see what happens when they fail or fall short of expectation. The illusion is proven to be such because only credit and not discredit is equally shared. The integration of a set of recursions of VSMs will not underwrite the illusion. It creates the interlocking model fast, as a corporate whole.

Now the output of the teams is twofold. In the first place, we expect a VSM-like version of the organization at each level of recursion. And if that organization has weaknesses (and which organization has not?) we expect that the modeling process will generate a succinct list of them. Because the VSM sets out to give a necessary and sufficient account of the laws of any viable system, it is a tool of intense diagnostic power. (Note: if the VSM language is used loosely and merely descriptively, then of course its power is lost.) So we expect some prescriptive suggestions too. After all, the management is itself implicated in these studies – and so are the workforce representatives whose members will doubtless bear the brunt of any substantive operational change.

The second output from the teams' work is a set of quantified flow charts (QFC). These are iconic representations of the wealth-producing or results-generating parts of each organization. The mapping of the organizations on to the VSM retains all the necessary complexity of viability with all the possible simplicity of topological mathematics. The QFC in turn offers necessary complexity in operational realities, depicted by a uniform, iconic set of conventions. And the key conclusions of the QFC work are the agreements that the whole team reaches as to which major flows and which potential bottlenecks shall be monitored. There are usually about ten to twenty of them at each level of recursion, although some may not be simple measurements but more elaborate ones. We readily perceive relative size, relative slope, relative color, and relative movement, whereas tabulations have to be disentangled from their level of arithmetical abstraction into these forms. The cybernetic approach offers to do that for the brain in advance, by automating the tabulations into iconics – or at least animations.

Evaluating Well-Being: [warning: this section introduces two new words to your vocabulary.] To this point we have been considering how to structure (by VSM) and how to measure (by QFC) the wealth-producing or result-producing components of the Nation – which in VSM parlance is called System One. Systems Two and Three are concerned entirely with the regulation of balancing a competing group of System Ones.

Let us turn to System Four, which handles the interaction of the whole viable system (that is the Nation in this case) with the outside world. Of course, System One deals piecemeal with its own set of environments, as a matter of local adaptation; but System Four acts for the nation as a whole. For instance, the Minister of Education is part of System One, whereas the Foreign Minister is part of System Four. But System Four is especially concerned with an environment that includes the future of its own people. Each component of System One is involved with the home milieu; but overall responsibility for the people's future is a regulatory function shared between the people themselves and the government agencies that act for them.

The problem is how to measure people-satisfaction. What is the QFC for 'well-being', which Aristotle called EUDEMONY.

The proposed solution is simple, if not simplistic. If people do not always know why they are feeling happy or sad, they do know that they are so. Fact is, they are doing computations on components and subjective categories with nonlinear metrics inside themselves, and they do not have conscious access either to the internalized model or to the weighting system or to the process. Let the respondent do the heavy scientific work for us.

An algedonic measure (from algos=pain, hedos=pleasure) offers no analysis of the eudemonic condition, but only measures it:

- Respondents are offered a task so straightforward that it is not threatening.
- They are very deliberately told that they will not be asked to explain their setting; the setting itself is the end of the encounter.
- The measurement system is analogue, and therefore does not pose difficult distinctions: it calls on a 'right brain', intuitive response.

- Nonetheless, it generates a 100-point two-digit index on the reverse side.
- It uses vernacular language, rather than an artificial or academic one – as direct a reading as can be gotten.

Respondents are shown a card with an orange circle in the middle, and they can adjust the circle into a pie shape that is blue; the orange represents happy, and the blue shape represents miserable, and the respondent adjusts the pie shape to reflect how they feel on a happy/miserable continuum.

What is the use of this measure, if it is not susceptible to analysis? It is intended to:

- To discriminate between sex, age, region, education and social class – which are accepted as objective demographic categories. If all the young people are happy, and only the departing are miserable, we are doing well – unless it is a 'seasonal effect' of ageing. We shall eventually find that out: possibly a major discovery. Or if twice as many educated are miserable as compared with the less educated, what then?
- To observe trends and to correlate them with managerial options.
- To detect incipient instability in the sense of any population's self-image of well-being: a vital potential input, hitherto created, monitored, and reinforced by the media rather than by the people themselves.

The quantified flow chart that the sum of the responses generates is broken down at the next level of recursion by the demographic categories used.

Measurement in real time: It is a crucial question as to how frequently these measurements (QFC) should be made. In the inherited system they are made on an epochal basis: each month, quarter, year. It is central to the cybernetic thesis here advanced that they ought to be measured continuously. Then the advocacy turns out to say: measure daily. For although a day is itself an epoch, it is sufficiently small as to generate time series that approximate a continuum. We are effectively in real time.

Critics often argue that government does not need such rapid information input, and if it had such a thing it would over-react. The first complaint is basically a statement of stereotype: 'everyone knows' that such instant input is not needed because no-one has it, nor can they see how to get it – officially, bureaucratically, that is. On the other hand, everyone knows (without quotation marks) that government is driven, as before a storm, by instant information channeled through the mass media, and often generated by them. This makes nonsense of authenticity. The official bureaucratic information system spends its effort in trying to keep pace, to justify its masters, to excuse the mistakes that may not even have been made. The situation is chaotic. The complaint as to likely over-reaction is merely risible in this context. A properly designed cybernetic system does not over-react, because it has properly calculated feedback functions that smooth irregularities and impose delays that are systematically appropriate. The present instant-response system, which has not been properly designed (nor designed at all), is as over-reactive as could possibly be.

What is the true case for real-time management? Consider the monthly epoch. Managers are proud if they have last month's figures by the second Tuesday of this month. It is far too late to do anything about any of that, except to learn. We learn from our mistakes, and resolve to avoid those particular errors in the future. We learn from our successes, too. But nothing has actually changed. If, however, we operate today on yesterday's figures (approximating today's, and close to real time), the situation is quite different. It remains the case that we cannot change what happened yesterday. But what we can learn concerns something: recognition of incipient instability.

If what happened yesterday, and is probably happening still now, is not so much a triumph or a disaster but a rocking-of-the-boat, and if we can detect that at once, then we may be able to restore the equilibrium. The disaster may never happen. The success may be assured.

We can now turn to a concept of management that has the power to manage, that is to say, it may do something now so that the future will be different from the future that would otherwise have been. This is the definition of planning, which is not a matter of toying with scenarios (a support function) but of taking decisions – so that the future may be different. It is easy to see how this holds for the future that ought one day to be, which is the topic of normative planning. It really holds too for the future that could be (if we work hard) fairly soon, whose topic is strategic planning. But the future that will be almost immediately, which is supposedly the subject of tactical planning, is foisted upon us – because our information is so lagged. This 'future' has already happened by the time that its likelihood is signaled, simply because the signal itself is still getting through the works.

We may 'return' to the power to manage in the short-term: 'return" is proposed because it was once possible to observe activities under command, dislike the outcomes, and issue new orders instantly. In this way, managers quelled incipient instabilities. The inability to do this today is an artifact of our immensely cluttered, bureaucratic and inept systems – computerized though they may be. Consider the absurdity of a government's employing an army of econometricians in order to forecast (from lagged data) where we already are. It is what happens. And because the forecasts are often wrong, we decide our plans as proceeding from an initial position that we never occupied in the first place.

The point of collecting all the data points daily from the QFCs, and channeling them into a steady data stream, is to be instantly aware of a structured reality. The data stream has to be revitalized within that data structure – provided by the logic of the VSMs and the QFCs. That logic is stored in a computer, together with data reference points for every indicator measured. These data points were established when the trans-disciplinary teams agreed their original findings.

For each point identified and measured, the teams established a normative (should be) and a strategic (could be) target. What the tactical result (will be) actually is arrives virtually as it occurs.

Comparisons of these actual results with the stored expectations at each level of planning provides a set of three indices for each arriving data point. Each is expressed as a two-digit number. The task now is to detect incipient instability in the data streams, and this is the task of Cyberfilter, a computer software package. As to its criterion of instability, it is not merely picking out exceptions to the norm, and not only measuring variances from means, these being traditional accountancy practices. Cyberfilter has the criterion of discovering instabilities that have importance to the manager, in terms of the possibilities of corrective action before any damage is done.

Take one index, newly calculated, and set it into its own time series. The program uses a technique to estimate four probabilities. How likely is it that this point is merely a chance variation? How likely is it to be a transient bit of noise in the system? How likely is it to be contributing to a change of slope? And how likely is it to represent a step function? Chance variations or transients are of no importance to a manager, and s/he is not told about them. But if a slope change or a step change seems likely, then this may signify incipient instability. It goes straight to the manager's desktop computer screen. Because of the rules of local autonomy built into the VSM, no-one but the responsible manager has access to this message. If the trend is not corrected within the agreed time, an algedonic signal goes to the next recursion upward. After appropriate delay, it is passed on to the next level, until matters are in order.

inConclusion: Information is Potential

The problem with the 20th Century Management Structure is that it has become so complicated that it has become a product of its own uncontrollable oscillations. The mindset of the dominant management thinking is that the solution to complexity is greater regulation, which is increasing the likelihood of accelerated random complications. The only improved situation would be to create a more sophisticated regulatory system with fewer layers, as Viable System Model is specifically designed to facilitate.

Jon Li is usually seen around Davis on his bicycle on his way to a meeting.