

JUST THE FACTS, CURRENT PERSPECTIVE # 13 – Beta 2.1

THE FACTS CITIZENS NEED TO UNDERSTAND CONCERNING SUBREGIONAL REALITY AND THE IMPACT OF SUBREGIONAL REALITY ON GREATER WARRENTON - FAUQUIER:

1. $A = \pi R^2$ **The power of the exponential function applied to human settlement patterns at the Regional, SubRegional and Alpha Community scales.**

Professor Albert Bartlett of the University of Colorado in “The Most Important Video You’ll Ever See” states:

“The greatest shortcoming of the human race is failure to understand the exponential function”

Professor Bartlett’s focus is on population growth, energy consumption and resource depletion but the failure to fathom the exponential function also fogs citizen understanding of functional and dysfunctional human settlement patterns. $A = \pi R^2$ is the First Natural Law of Human Settlement Patterns articulated in *THE SHAPE OF THE FUTURE* published (2000.)

How does a basic equation from plane geometry apply to human settlement patterns, and what citizens need to understand to shape a sustainable future?

When one doubles the length of radial trip from the Centroid of an Urban agglomeration, they quadruple the land area accessible with a trip of that length.

Paved carriage roads, then railroads and most recently – and most importantly – Large Private Vehicles (Autonomobiles) and limited access highways have blinded humans to the impact of radial travel in and beyond Urban agglomerations. The result?

Vastly more land is devoted to scattered, dysfunctionally located Urban land uses than there is an existing or foreseeable need. Even more land is speculatively held to meet FUTURE Urban land uses for which there will NEVER be a market.

For starters this blindness to the power of $A = \pi R^2$ by citizens, Agencies, Enterprises and Institutions has:

- Exacerbated the problems created by the conventional wisdom based on failure to understand the impact of $A = \pi R^2$. For example: It is wise to ‘drive till you qualify’ so that a Household can snare ‘more house for the money.’ The location of foreclosures since the onset of The Great Recession makes this fallacy painfully obvious. (See Fact 4. below)
- Made solving ‘the traffic congestion problem’ for those relying on Large, Private Vehicles for Mobility and Access IMPOSSIBLE as a matter of physics as well as economics. (See Fact 5. below)
- Wildly inflated the value of remote land for Urban land uses and led to The Helter Skelter Crisis. (See Fact 6. below)

Facts 2 through 9 below illustrate the broad impact of the failure to understand $A = \pi R^2$.

The following Quantification of SubRegional land area in the northern part of Virginia puts the impact of $A = \pi R^2$ in sharp perspective. (For graphic illustrations of this data see the PowerPoint “The New Urban Region Conceptual Framework” in Chapter 49 of *TRILO-G*.)

Within 10 miles of the Centroid of the National Capital Subregion there are about 70,000 acres in Virginia. The Capital Beltway is a little less than 10 miles from the Centroid – The Virginia end of Memorial Bridge. Tysons Corner is INSIDE Radius = 10 - Miles.

Within 20 miles of the Centroid of the National Capital Subregion there are about 270,000 acres in Virginia. Reston is INSIDE Radius = 20-miles. A 20 mile radius encompasses much of Fairfax County, all of Arlington County and the City of Alexandria as well as slivers of eastern Loudoun County and eastern Prince William Counties.

Within 30 miles of the Centroid of the National Capital Subregion there are about 600,000 acres in Virginia. Gainesville is about 30 miles from the Centroid.

Let us stop at the 30-Mile Radius and consider Holding Capacity:

Thirty miles from the Centroid of the National Capital SubRegion there are approximately 1,800,000 acres of land, 600,000 of it in Virginia.

To create functional Urban fabric that does not rely completely on Large, Private Vehicles for Household Mobility and Access, and with generous Alpha Community-scale OpenSpace, there must be at least 15 persons per acre at the Alpha Community scale. That means there is space for 9 million people in Virginia in places that look like Greater Reston INSIDE Radius = 30-Miles.

Places that look like Reston could have:

- 20 to 25 percent of the dwelling units be Single Household Detached Dwellings – but NOT in scattered subdivisions.
- 40 percent of the land in common open space
- A functional Balance of Jobs / Housing / Services / Recreation / Amenity (J / H / S / R / A) WITHIN the Community

If 50 percent SubRegional-scale and Regional-scale OpenSpace is provided inside Radius = 30-Miles, there is AT MINIMUM sustainable densities for 4,500,000 residents. This holding capacity is:

- Inside Radius = 30-miles (in realtor speak this is “on the DC side of Gainesville”), AND
- Far outside the logical location of The Clear Edge between the Urbanside and the Countryside.

There are now less than half that many residents in this part of Virginia.

Agency policy, programs and controls as well as land owner / Enterprise speculation can scatter out the Urban land uses so that they waste more land. But when that happens:

- The results are not what the market demonstrates citizens want, and
- Neither Citizens and their Agencies nor the environment can afford to pay for the 40 +/- Urban services upon which contemporary Urban life depends in scattered settlement patterns. (See Five Natural Laws of Human Settlement Patterns articulated in ***THE SHAPE OF THE FUTURE.***)

Having considered the Holding Capacity of the land within Radius = 30-Miles, let us now extend the radial travel beyond Radius = 30-Miles.

Within the 30-Miles to 60-Miles Radius Band from the Centroid of the National Capital Subregion there are about 2,000,000 acres in Virginia. Greater Warrenton-Fauquier lies between Radius = 35-Miles and Radius = 55-Miles. Greater Warrenton-Fauquier occupies about 20 percent of the 30-Miles to 60-Miles Radius Band.

Why is failure to understand $A = \pi R^2$ so important? Consider Facts 2 through 9 below.

2. Where the Jobs Are and Will Be

The vast majority of the Jobs in the National Capital SubRegion are now, and are projected to be for the foreseeable future, within Radius = 10 Miles. (For graphic depiction and data sources See the PowerPoint “The New Urban Region Conceptual Framework” in Chapter 49 of *TRILO-G* and PowerPoint “Blueprint for a Better Region” available on the Internet by Googleing the title.)

Why will most of the Jobs – and almost all the ‘good’ Jobs – be in the Core? The employers who can offer attractive Jobs will choose Job locations where many who could qualify to hold those jobs want to live and seek Services. The market makes it very clear that these potential employees do not want to live and seek Services in scattered subdivisions. Most who qualify to hold good jobs want to live in communities with a Balance J / H / S / R / A so that they do not require a car trip to meet every need.

3. Vacant and Underutilized Land

There is sufficient vacant and underutilized land within the Core of the National Capital Subregion for projected ‘growth’ without ‘developing’ another acre in the Countryside.

For example there is enough vacant and underutilized land within half a mile of existing METRO station platforms to meet the land requirements for new Jobs, new Housing and new Services for the foreseeable future. The station-area patterns and densities of land use used in this Holding Capacity calculation are similar to those in the Rosslyn - Ballston Corridor (R-B C) of Arlington County. The R-B C is NOT Manhattan, there are single Household detached dwellings WITHIN a half mile radius of each station.

The holding capacity calculations are based on patterns and density for which there is, even in April 2011, a strong market. They also support the evolution of a Balance of Jobs / Housing / Services / Recreation / Amenity in the station areas and address the Affordable and Accessible Housing Crisis (see Fact 4. below), the Mobility and Access Crisis (see Fact 5. below) and the Helter Skelter Crisis (see Fact 6. below). If station areas are Balanced and the METRO system is Balanced then METRO can pay for itself out of the fare box.

This calculation of station area holding capacity is a fact even without the METRO station-areas under construction on the Silver Line to Dulles Airport and eastern Loudoun County. It also does not count the vacant and underutilized land adjacent to existing and planned shared vehicle systems within Radius = 20-Miles. (For graphic depiction and data sources See the PowerPoint “The New Urban Region Conceptual Framework” in Chapter 49 of *TRILO-G* and PowerPoint “Blueprint for a Better Region” available on the Internet by Googleing the title.)

4. The Affordable and Accessible Housing Crisis

For 50 years the SubRegion has been planning, subsidizing and building the Wrong Size Houses in the Wrong Location. Housing must be near Jobs and Services. See Point 2. and Chapter 22 – Without Shelter in *TRILO-G* as well as THE CURRENT TRAJECTORY.

Building the Wrong Sized House in the Wrong Location is not unique to the Virginia part of the National Capital SubRegion. See “The Landscape of Recession” by the Metropolitan Policy Program at Brookings Institution (March 2011). The problems have been made much worse by ignorance of the impact of $A = \pi R^2$ in the context of limited access radial arterials and a very attractive Countryside. This means that the Affordable and Accessible Housing Crisis – and well as the Mobility and Access Crisis (Fact 5.) and the overarching Helter Skelter Crisis (Fact 6.) must be addressed WITHIN Greater Warrenton-Fauquier by capitalizing on the Beta Communities unique assets.

5. The Mobility and Access Crisis

It is not possible (from the perspective of physics OR economics) in a large Urban Region to build an infrastructure system that provides Mobility and Access to citizens who rely on Large, Private Vehicles (Autonomobiles) to meet all or most of their daily and weekly travel needs. See PowerPoints “The Physics of Gridlock” and “Priority Transport Improvements” in *THE SHAPE OF THE FUTURE*, 4th Printing, and Chapter 21 – The 200-million Car Pile Up, in *TRILO-G* as well as THE PROBLEM WITH CARS (Forthcoming)

The Washington-Baltimore New Urban Region is the fourth largest New Urban Region in the US and the fifth largest in North America. The National Capital SubRegion ranks in the bottom three categories among large Urbanized areas when standard formulae measuring of transport dysfunction are applied.

This congestion is due to scatteration of Urban land uses and the fact that neither citizens nor Agencies can afford to build a Mobility and Access system to support the scattered distribution of origins and destinations of travel.

6. The Helter Skelter Crisis – The Current Trajectory of Dwelling and Property Values

In July of 2011 SYNERGY noted that outside Radius = 30-Miles from the Centroid the value of dwellings and land was not ‘recovering’ from The Great Recession and that the SubRegional pattern was not consistent with the pattern of dwelling and land values after the last seven recessions.

Inside Radius = 20-Miles there WAS recovery and inside Radius = 10-Miles there had been little or no loss in value, especially for buildings and land near shared-vehicle system station platforms. Averaging all the dwelling unit values in the SubRegion accounts for why the SubRegional (Washington, DC MSA) dwelling and land value decline is not as alarming as other MSA's in the US.

These findings of decline in value outside Radius = 30-Miles are completely consistent with the parameters of prosperity, stagnation and decline outlined in both *THE SHAPE OF THE FUTURE* and *TRILO-G*. The importance of these Three Crises and the citizen education strategy is spelled out in PROPERTY DYNAMICS – PART ELEVEN of *TRILO-G*. Also see the documents cited in THE CURRENT TRAJECTORY.

SYNERGY made three presentations on these facts in Greater Warrenton-Fauquier – An Enterprise bank committee (17 Aug 2010), the Fauquier County Chamber of Commerce (15 Sept 2010) and the Balanced Growth Alliance. (22 Nov 2010). So far the response can be summarized as: “You may be right, I have seen nothing that contradicts your characterization of the current trajectory but for now we are going to keep doing what we have been doing and hope these problems just go away.” See the criteria for **Collapse** of societies in Jared Diamond's book *Collapse: How Societies Choose to Fail or Succeed.*”

7. Balance, Critical Mass and Resiliency

For any Community – and especially for a Balanced But Disaggregated Community such as Greater Warrenton-Fauquier that is located far outside the logical location of The Clear Edge around the Core of the Region – there are three critical parameters for evolving economic prosperity (perhaps better termed ‘**Economic Resiliency**’), social stability and environmental sustainability: **Balance, Critical Mass and Resiliency**.

To achieve **Balance, Critical Mass and Resiliency**, citizens must create community (with a small ‘c’) at all scales of human settlement. That means creating places citizens want to live, work and seek / provide Services at the Dooryard-scale, the Cluster-scale, the Neighborhood-scale, the Village-scale and at the Community-scale (with a Capital ‘C’) as well as at the SubRegional and New Urban Regional scales. **Balance, Critical Mass and Resiliency** at all these scales will be required to achieve a sustainable trajectory for not just New Urban Regions but for MegaRegions, continents and the planet. See *THE SHAPE OF THE FUTURE* and *TRILO-G* and books listed in The Alpha Community Reading List.

8. Prosperity of Citizens vs Prosperity of Enterprises

Creating the **Critical Mass** necessary to achieve a **Balance** of Jobs / Housing / Services / Recreation / Amenity and thus economic prosperity / economic **Resiliency** as well as social

stability and environmental sustainability will be difficult. This is because over the past three decades economic systems have been gamed to make Enterprises and a few Households at the top of the Ziggurat much more wealthy while those at the bottom of the economic / social food chain have lost ground. See books listed in The Alpha Community Reading List.

9. The Great Conundrum

Conventional wisdom suggests that economic growth raises all boats. That WAS the case in the US for much of the past 200 years and especially from 1950 to 1975. Since that time economic growth has benefitted primarily those at the top of the Ziggurat. (See books listed in The Alpha Community Reading List.)

It is assumed by many that ‘growth’ is required to generate the **Critical Mass** necessary for **Balance** and **Resiliency**. But ‘growth’ especially exponential growth, is NOT the ‘answer’ (or even AN answer), on a finite planet with a rapidly expanding cohort who want a larger share of the resources. (See POSTSCRIPT ON GLOBAL REALITY).

Here is where creating **Critical Mass**, **Balance** and **Resiliency** in Greater Warrenton Fauquier becomes complex. At SYNERGY we call this “The Great Conundrum.”

Consider the relationship between growth of the GNP (or the GDP) and ‘citizen prosperity.’ It turns out that the Metropolitan Statistical Areas (MSAs) with the biggest personal income gain per capita are NOT the ones with the most population growth or GDP expansion. (See Fodor, Eben “Relationship between Growth and Prosperity in the 100 largest U.S. Metropolitan Areas” and Benfield, Kaid “Personal income states: Older cities (sic) [these are in fact MSAs, NOT ‘cities’] in the East and Midwest are rebounding.)

The questions become:

- How to achieve Critical Mass with out conventional ‘growth’?, and
- How to achieve Community transformation without economic activity in the Core of the National Capital SubRegion continuing to drive change outside Radius = 30-Miles?

These are especially difficult questions when the Beta Community in question is between Radius = 35 to 55 - Miles and because up until now the Beta Community has been living off of the largess of an expanding SubRegion that is no longer expanding geographically. This is compounded by the fact that the SubRegion, the REgion, the MegaRegion and all of the ‘developed’ world has been burning through the planets Natural Capital.

Then there is a double whammy:

Greater Warrenton-Fauquier is a Beta Community that has prided itself on being very selective about ‘growth’ and in fact is accused of being on the ‘no growth’ side of the simplistic and meaningless ‘growth / no-growth’ debate.

In fact Greater Warrenton-Fauquier has experienced a great deal of ‘growth’ over the past 50 years – most of it in the wrong locations – outside Clear Edges around the Service Districts. (See graphics in Chapter 2 – Scatteration: Disaggregated Urban Land Uses Outside the Clear Edge in PART ONE – THE ROOTS OF THE HELTER SKELTER CRISIS of *TRILO-G* and Chapter 17 – Vignettes of Land Use and Land Management Dysfunction in PART FOUR – THE USE AND MANAGEMENT OF LAND of *TRILO-G*.)

What is the answer for Greater Warrenton-Fauquier?

Capitalize on the special assets that the Community possesses to create Fundamental Transformations in the RIGHT location.

That right location is WITHIN The Clear Edges around each of the Urban Enclaves (Service Districts) in order to evolve Balanced components of a Balanced But Disaggregated Alpha Community.

This ‘simple’ answer will raise very difficult policy questions such as where to spend money for enhancing Broadband Internet service? How to pay the location-variable costs such as school bussing and fire protection?

Before any of the questions raised in Fact 9. can be addressed, citizens must understand the first eight Facts related to human settlement patterns.

POSTSCRIPT ON GLOBAL REALITY

The question of the Wealth Gap noted in Fact 8. aside, over the past three decades, the US, the EU and the Asian Tigers have been enjoying a rise in the traditional ‘standards of living’ without increasing per capita consumption by much. However, these “developed” nation-states are consuming far more than their ‘fair share.’ The US has about five percent of the worlds population and consumes approximately twenty percent of the planets resources. Many of those resources are becoming scarce, depleted and exhausted.

SYNERGY contends that citizens can and MUST cut per capita consumption and reverse population growth and at the same time IMPROVE Quality of Life through the evolution of functional and sustainable human settlement patterns.

The fact is that during the Golden Age of Gluttony (aka, The Era of Mass OverConsumption) the rich Regions of the planet have been living off the entire planets Natural Capital.

Now there is a NEW reality: About 500-million citizens in North Africa and the Middle East are in some stage of revolt to secure MORE of those scarce, depleted and exhausted resources.

Add to this fact that Brazil – the sixth most populous nation-state – has elected a new president committed to raising 14 million citizens out of poverty. In India – the second most populous nation-state – there are riots over government corruption and inequitable distribution of resources. In China – the most populous nation-state – the new (12th) Five Year Plan focuses for the first time specifically on raising the quality of life for those at the BOTTOM of the Ziggurat. In sum, almost half the population of the planet is demanding and planning to consume MORE of the already scarce, depleted and exhausted resources.

The question is: Will there be ‘ENOUGH?’ (See ENOUGH? CP # 18 – 1 August 2011)

The World Watch Institute, the advocates of a steady state economy, Professor Bartlett and many others have been saying for decades that there will not be ENOUGH if humans stay on the current trajectory. They have been recently joined by The New Economics Institute, the DeGrowth movement and others.

It is very clear that the US and its Regions cannot continue to expand GDP via the Mass OverConsumption. That has been the policy and goal for 200 years and especially for the past 50 years. Continuing this policy – will drive economic, social and physical indicators of human health, safety and welfare into ever more negative trajectories.

Revising Agency policies, programs and projects to position citizens of the US to get a bigger share of the planets resources by gaming ‘globalization’ – the most frequently stated goal of federal and state policy – is akin to positioning citizens for the opening of the Louisiana Purchase to settlement and herding the ‘indians’ into Oklahoma. That was 200 years ago’s agenda. Whoever else might jump into the race, Andrew Jackson is NOT running for office in 2012.

The current imperative is to evolve **Balance, Critical Mass and Resiliency** at the Alpha Cluster, the Alpha Neighborhood and the Alpha Village scales so that there can be **Balance, Critical Mass and Resiliency** at the Alpha Community scale and beyond.

Balance, Critical Mass and Resiliency at the Alpha Community scale is essential to evolve sustainability at the New Urban Region scale AND to evolve Urban Support Regions into New Urban Regions.

There will be different formulations of **Balance**, different dimensions of **Critical Mass** and different levels of **Resiliency** required inside, vs. outside, The Clear Edge around the Core of New Urban Regions and The Clear Edges around the Urban enclaves in the Countryside.

Success in Greater Warrenton-Fauquier will require that all citizens understand the facts and work together, starting at the Dooryard scale.

There must be a Balance between competition and cooperation AND a Balance between consumption and conservation – in other words, true conservatism.

EMR

This CURRENT PERSPECTIVE was created as background information for the ‘Program Notes’ published in “Fundamental Transformation: Community survival depends on philosophical metamorphosis” by Bill Walsh *PIEDMONT Business Journal* Spring 2011 Page 58 and also published as CP # 22 A BRIEF RENDITION OF THE NEED FOR FUNDAMENTAL TRANSFORMATION – 11 Nov 2011.