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## Historically Structured Sampling (HSS):

How can psychology's methodology become tuned in to the reality of the historical nature of cultural psychology?

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**ABSTRACT.** Cultural psychology brings back to psychology the crucial role of history—which leads to the need for new methodology. Such methodology needs to fit the nature of phenomena—which in psychology are of open systemic nature. Cultural phenomena are historical at all levels: personal (personal life histories), that of society (history of any given society) and at the level of the microgenesis of actions. Such historicity renders a number of habitual empirical practices—such as random sampling and generalization from samples to populations-- inappropriate for science. Despite the tradition in psychology of that treats “random sampling” as normative for science, we show that it constitutes a conceptual dead-end street that moves psychology away from adequate strategies of generalization. Psychology at large can follow the lead of cultural psychology and look at individual cases as systemically organized within themselves, generalizing from such systemic organization of particulars to generic systemic models of the phenomena, with subsequent empirical testing of these models in selected new individual cases. We show the importance of the selection of individual cases for the study through consideration of their historical trajectories moving through a common temporary state (equifinality point). Some of these equifinality points are obligatory—set by the phylogeny of the species or by collective cultural construction.

In this paper we propose the **Historically Structured Sampling** (HSS) – which is based on the acceptance of **Equifinality Trajectory Model** (ETM)-- as the core for the methodology of selection of the objects of investigation in psychology. This orientation grows out of our look at culture in psychology—especially as it brings to psychology the notion of history. The adoption of culture leads to the necessity to take a new look at some of the key methodological problems in the discipline (Valsiner, 2001a, 2003, 2004). It is the systemic nature of human psychological processes that becomes highlighted by the re-insertion of cultural—higher psychological processes—into our models of the mind.

A major problem that blocks research in cultural psychology from developing new methodology is the issue of sampling. Sampling is an inevitable operation in any research project. Any research effort—unless it analyzes the whole realm of the given phenomenon—requires some way of sampling. Some specimens of the existing (known) pool of all specimens are selected—which means others are left out. The researcher generalizes from the studied specimens (sample) to all specimens (population)—and is likely to misjudge what is generalized as it is posited to be applicable to the non-studied cases. Yet, as we show, even moving the sample to cover the population is no automatic solution here.

**The varieties of sampling** In existing methodological discourses, the notion of sampling takes a

number of forms (see Table 1).

**Table 1. Different notions of Sampling in the social sciences**

**Random:** a sample of objects is selected for study from a larger group (called population). Each object is chosen by procedures that are designated to be random— it is “by chance” that the objects are selected. Each object in the population has an equal chance of being selected into the sample. Within that sampling mode sub-types exist: cluster sampling (population is divided into clusters, followed by random selection of the clusters), or independent sampling (samples selected from population are mutually free of affecting one another).

**Representative:** The act of selection is based on the proportional representativeness of the objects in the population. The sample includes a comparable cross-section of varied backgrounds that are present in the population. Sub-types are stratified sampling (first divide the population into sub-groups, then select from these groups) and matched sampling (each object in one group is matched with a counterpart in another)

**Theoretical:** the underlying theory if the researcher determines whom to select for the study. Our new introduction—HSS—belongs here.

**Practice based:** A practitioner—a clinical psychologist, teacher, nurse-- who wants to do research on their field and experience treats his or her clients as research subjects. Ethical protections of subjects’ rights are in place, but the agreement by persons to participate is set up within the field of their indebtedness to the researcher as the provider of some other practically needed services.

**One-point breakthrough.** Even if researchers hope to access the ideal kinds of subjects, exceptional circumstances and/or special conditions may prohibit that. In such case, the researchers struggle to access anyone who accepts the research proposal—literally fighting against tight access barriers. Undoubtedly such sampling is far from being “non-biased” or “random”—yet there is no need to criticize such a sampling as “biased”. Depending on the research theme, it’s preferable to do something rather than nothing. And it may develop into a version of relational network based sampling as bellow.

**Relational network based (i.e. the “Snowball Method”):** The researcher engages the members of the first selected (and agreeing) participants to bring to the sample the members of their relationships networks. A crude sub-type is quote sampling (researcher may be given a “quota” of how many and what kinds of objects s/he needs to bring into the study.

**Convenient:** Researchers in University ask students to participate into their research. Cognitive Psychologists like to regard them as adults and developmental psychologists like to regard them as adolescent. And comparative psychologists like to regard them human-being. So university students are convenient samples of psychology studies.

**Capricious:** The researcher takes whoever happens to agree to participate.

As is obvious from Table 1, different traditions in the social sciences have tried to modify the

canonical version of sampling—that of random sampling—in ways that fit their epistemological goals (theoretical or representative sampling) or by giving particular practical means of finding research participants a fancy label (e.g. convenience, practice-based, etc.). That makes sense, since the belief in random sampling is nothing more than a belief—since in practice the randomness of any single choice (e.g., of a specimen from a population— to make a sample) is in principle impossible to ascertain<sup>1</sup>. Yet there is a bigger issue behind that practical impossibility of randomness of the “random sampling”—the role of the open-systemic phenomena in the selection schemes of sampling. The crucial issue for cultural psychology is whether any of the sampling schemes opens researchers’ access to the phenomena of culture in psychological processes, or keeps these phenomena out of touch for the scientists. Psychology at large has been active in keeping researchers away from the crucial aspects of their phenomena (see demonstration in the case of personality inventories—Valsiner, Diriwächter & Sauck, 2004). But what is the situation in cultural psychology—the “up and coming” area in psychology (Cole, 1996)?

**Culture as a problem for the social sciences.** Culture is a historically emergent phenomenon. It emerged from the historical interchange of the species that was to become *Homo sapiens*, and the environment. In Max Weber’s words,

...culture is a finite segment of the meaningless infinity of the world process, a segment *on which human beings confer meaning and significance.* (Weber, 1949, p. 81, added emphasis)

Weber’s comment recognizes the unique, personal nature of experience that becomes organized by cultural tools—instruments and signs (semiotic mediators). It is the functional focus on cultural tools used within the psychological functioning of human beings that distinguishes cultural psychology from its cross-cultural cousin (see Valsiner, 2003 for elaboration of this distinction).

Our contemporary cultural psychology looks upon human psyche as social in its ontogeny and constructive in its microgenesis (Valsiner, 2000). Thus, cultural psychology **is necessarily a historical psychology**—and our current discourse about culture in psychology continues along the lines of *Völkerpsychologie* (Diriwächter, 2004), where the question of higher-level phenomena as those relate to the lower-level psychological functions was the central question. Relating of these levels when seen in time entails the synthesis of new (higher) levels, and de-differentiation (demolition) of previous higher structures. Emergence and dissipation go hand in hand in cultural organization of human psychological life.

The issue of how to make sense of part<>whole relationships that has haunted psychology all through its history re-surfaces in contemporary cultural psychology. In cultural psychology, it is that latter link—“vertical consistency” between general assumptions, theories, methods, and phenomena (Branco & Valsiner, 1997) that determines the adequacy of one or another look at sampling. We will first look at the traditional logic of “random sampling”, and show that it misses precisely those aspects of systemic phenomena of cultural kind that cultural psychology studies. We then introduce another—theoretically based—notation of sampling—Historically Structured Sampling.

### **Design failures: “blind spots” of “random” sampling**

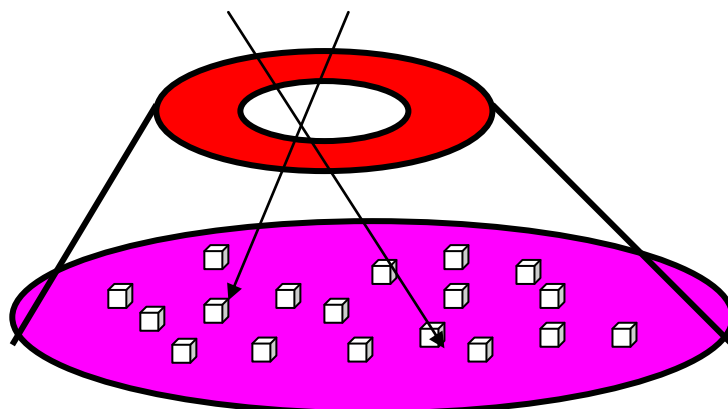
Despite use of the notion of population in our methodological discourse, there is a paradox

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<sup>1</sup> Randomness of series of numbers can be mathematically determined—but statements about randomness (or non-randomness) of each single number in the series cannot (see Chaitin, 1975). Social scientists’ sampling efforts are necessarily single decisions—take X rather than Y or Z at time t, and thus cannot be random, even if “randomization machines” like tossing coins, using random number generators, etc. are practically used in the sampling process.

—we talk about population as if it were fixed and finite (even if not possible to study, in full-- for practical reasons), but in reality it is fluid, ever-changing, and infinite<sup>2</sup>. The population does not exist as a given—it develops as the specimens in it act, produce, reproduce, and change their own ways of being. Thus, in reality the conglomerate we call population is some collectivity of functioning systems that just “merely is” but exists in its own processes of movement—of the whole, and of its parts. The basic assumptions of systemic (in contrast with elementaristic) view on the phenomenon of “population” makes the difference in the ways the notion of sampling becomes crafted.

**FIGURE 1. A physical example of how sampling works in case of non-systemic phenomena.**



The traditional look at sampling is usually exemplified by the act of drawing marbles from a box, at random (Figure 1). It exemplifies the tradition of an atomistic world view where no systemic organization needs to be presumed. The objects to be sampled are assumed to be independent of one another, and of the context, and not possess any “counter-intentionality”<sup>3</sup> to the sampling efforts.

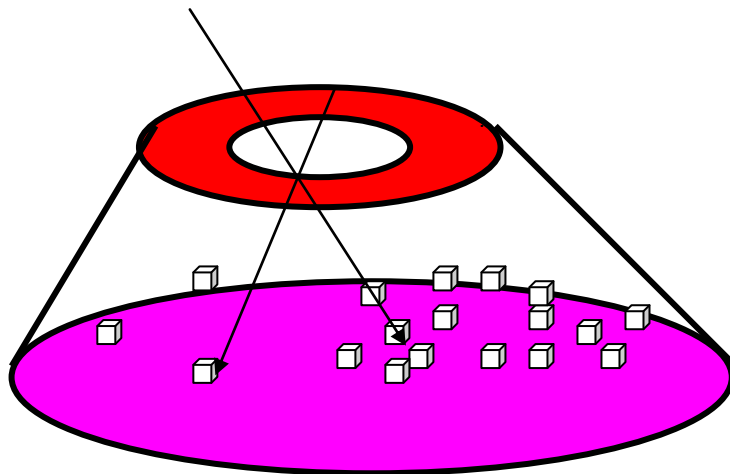
Given the surface of the box and the homogeneous nature of each of the marbles, each of them can be said to “have” equal probability of being drawn to the sample<sup>4</sup>—and hence any sub-group of the marbles drawn would provide evidence about the homogeneous category of these objects. This situation is still the same in case the marbles become unevenly distributed in the box (Figure 2)—as long as they are homogeneous and the boundaries of the box (“search ground”) are known, the sampling of the objects is sufficient for generalization from a homogeneous sample to homogeneous population.

<sup>2</sup> The traditional statistical inference philosophy recognizes the unknowability of the “hypothetically infinite population” but **considers it to be stable in its infinity**. That legitimizes the notion of getting to know it through random sampling techniques (Gigerenzer & Murray, 1987, p. 15) and the reliance on the “law of large numbers”. In contrast, **if the infinite nature of population is assumed to entail any form of change of the whole population**, random sampling would lead to creation of systematic artifacts.

<sup>3</sup> The ideas of sampling do not consider the prerogatives of sampled subjects to refuse to participate, or to undermine the investigation by way of self-presentational or any other intentional goal.

<sup>4</sup> Note the attribution error in this way of phrasing the issue—the language use implies some property that is inherent **in each** of the marbles, while the actual outcome of being selected (or not) depends fully on the interaction of the selected marble and the field.

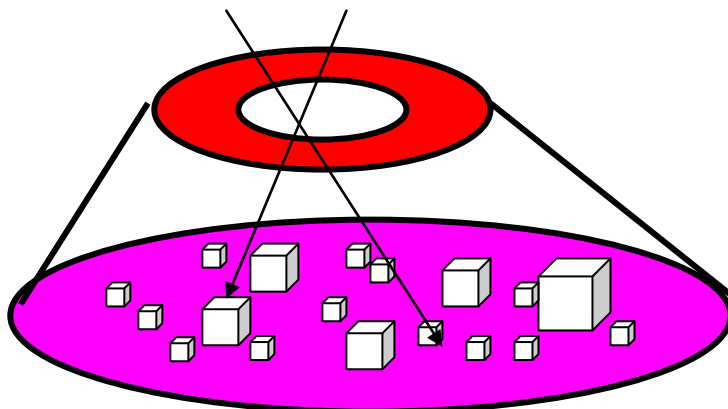
**FIGURE 2. A physical example of how sampling still works in case of non-systemic phenomena – unevenly distributed in the box**



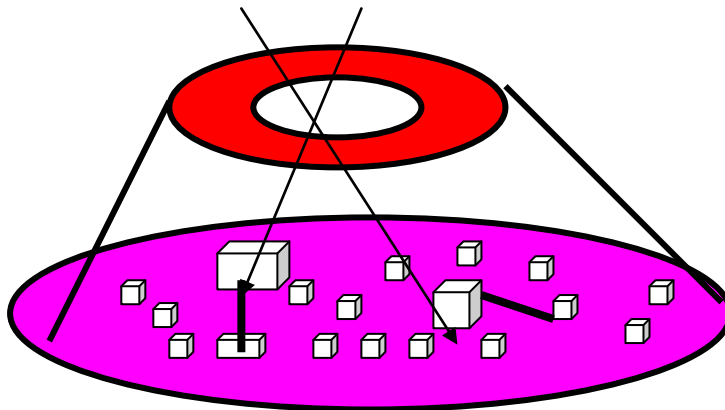
The picture becomes complicated if the different specimens of the population vary quantitatively—while maintaining their homogeneous class nature in qualitative terms (Figure 3). Some marbles are bigger; others smaller, the sample drawn from the box will be heterogeneous in quantity while still being homogeneous in quality.

Such separation of the qualitative and quantitative features of objects of investigation has been axiomatically accepted in psychology, and has made certain uses of statistical techniques (e.g., correlations—Valsiner, 1986) possible. Yet this assumption is untenable—in any systemic phenomena, quality and quantity are directly mutually co-constructive—quantitative alterations lead to qualitative irreversible shifts (Prigogine, 1978, 1987).

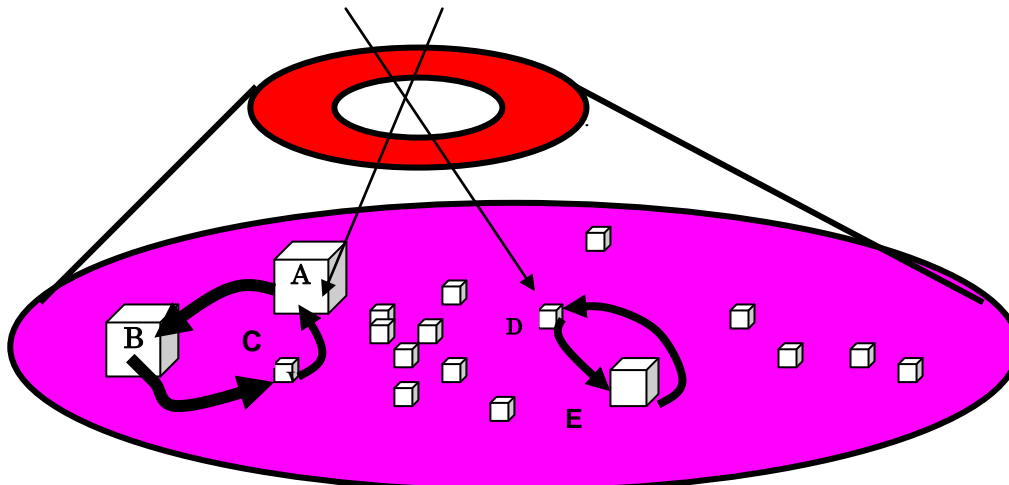
**FIGURE 3. A physical example of how sampling marginally works in case of non-systemic phenomena that form a quantitatively heterogeneous class**



**FIGURE 4. An example of how sampling fails to work in case of non-systemic—yet linked—phenomena.**



**FIGURE 5. An example of how sampling creates an error in case of treating systemic phenomena as if these were non-systemic objects**



Thus, traditional sampling as described in Figure 3 misses the most crucial issue—that of systemic organization. Figure 4 illustrates the case where different systemic linkages exist between the members of the population. Yet these links are not (yet) examples of systemic interdependencies. Rather, these are physical links. In the case depicted in Figure 5, the traditional sampling (that would create a “sample” {A, D}) is not representative of the systemic relations among the “members of the population” (systems A-B-C-A and D-E-D), but breaks down that functional systemic relation. Yet, without any doubt, all the “items” in the “box” can be viewed as detectable forms—like in Figure 3. **The traditional sampling philosophy has the “blind spot” in axiomatically granted overlook of the interdependence of the elements in the field.** In other terms—sampling from an unknown “population” and hopes to generalize the results of the study to “the population” cannot answer any questions in cases where the phenomena need to be considered systemically organized.

### **Why has the sample-to-population line of generalization survived?**

Science is a social enterprise—and hence vulnerable to non-linear historical development. Technological progress does not automatically mean new breakthroughs in ideas, even if it may make such breakthroughs possible. The thinking in science is intellectually interdependent with the

socio-historical context which the scientists inhabit (Valsiner, 2004; Valsiner & van der Veer, 2000). Even within the same historical period and within the same society, large differences exist between various disciplines in their way of generating knowledge.

The development of quantification of data in psychology is a good example of a search for precision that has ended in its opposite. In the name of consensually validated methods and data analysis techniques, the nature of phenomena has been lost from consideration (Cairns, 1986). Statistical methodology has re-directed the discipline in ways that have elevated methods to the status of theories (Gigerenzer, 1993) and led to the proliferation of pseudo-empirical research (Smedslund, 1995). The “inference revolution” (dated approximately to 1940-1955—Gigerenzer & Murray, 1987, chapter 1) created a mono-vocal orthodoxy of the inferential techniques and introduced it as standard scientific practice in psychology.

One of the results of these social tendencies in mid-20<sup>th</sup> century psychology has been the loss of precision. This statement may seem paradoxical—given the multitude of numerical data presented in abundance in contemporary psychology journals. Yet precision is not in numbers but in what the numbers represent, and psychology’s data have become largely unrepresentative of the phenomena they are derived from (Cairns, 1986). The result for knowledge construction is a conceptual dead-end street of contemporary psychology. It continues to be in a crisis—hence new areas of research—such as cultural psychology—may have a chance of restoring the phenomena <> data relationship for improved precision in our science.

**The self-constructed limitation of the social sciences.** Above we have proven that sampling of specimens from population is based on premises that render the study of any structured systemic phenomena—of cultural and developmental kind—in principle impossible. Social sciences have moved into a dead-end street as they have, historically, tried to deal with the issue of multiple causality in phenomena. The roots of the notion of random sampling—uncontrollability of multiple assumed causes that operate within a population—creates the need for randomization of a sample selected from the population. It is based on the assumption of independence of the objects of sampling. In case of human populations the notion of randomness is misplaced—as it is applied to structurally interdependent human worlds Shvyrkov & Persidsky, 1991).

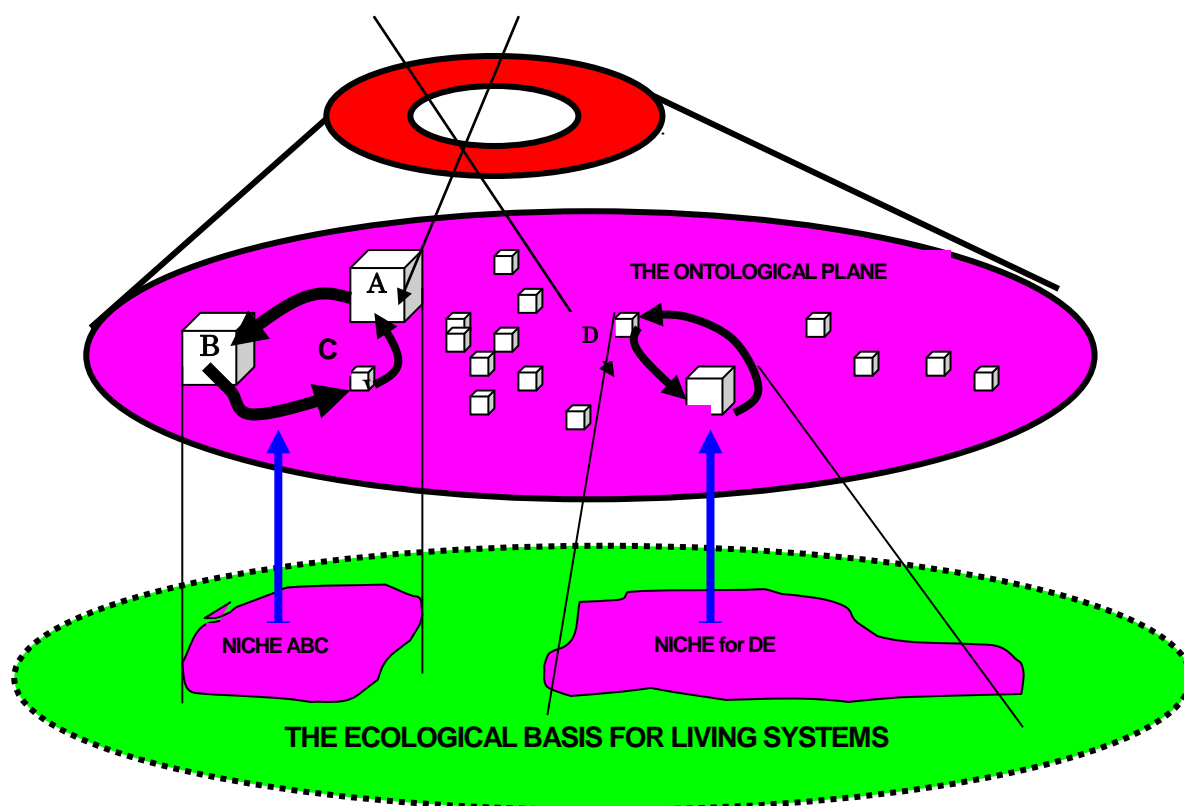
### **Sampling in case of non-independent phenomena**

The analysis above is still failing—we have not demonstrated how the philosophy of sampling of elements (of systemic units) also overlooks the autopoietic nature of the systems themselves. The systems are not “just there” to be found, and “collected” (Kindermann & Valsiner, 1989), but are self-organizing systems that develop in relation with the environment. Their survival depends upon that environment—and by their actions they change the environmental niche they inhabit (Odling-Smee et al, 2003). Hence an additional oversight is to treat the “sampling box” as if it is merely a “container” that keeps together the specimens to be sampled from (Figures 1-5). Instead, the “box” is the environmental basis for survival and development (Figure 6). It is the processes of development based on organism-environment relating that need to be sampled—not selected (and disconnected) surface outcome features of the specimens that have developed.

In the case depicted in Figure 6, the traditional sampling -- that would create a “sample” and later would make generalizing statements about “populations”—shows its fundamental misfit. The causal system that operates for the functioning and development of the discernible phenomena (A,B,C,D, E and others in Figures 1-6) are not located at the plane of their ontological (manifest) level at all—but in-between the systemic organization (that can be detected at the manifest level) and the related plane of ecological basis for survival. Any analysis of the phenomena that transcends the immediate ontology of their being of some (or another) kind (category) needs to study (a) their

systemic nature, together with (b) their functional relations with their ecological niches.

**FIGURE 6.** An example of how traditional sampling bypasses the crucial feature of the living systems—interdependency with environments.



Living systems develop—and development entails creation of trails, life trajectories. So even Figure 6 is limited- it shows the interdependency of the system and the ecological niche, **but not its history**. Yet it is the history that distinguishes the open-systemic phenomena from their closed-systemic or non-systemic counterparts. Thus, any study of human psychology (or sociology) is necessarily historical in its scope, if it is to maintain its focus on the issues the researchers declare to study.

We propose that the adequate sampling of the specimens of systems proceeds through the sampling of system-historical trajectories that include the past (retrospective base), the present, and an analysis of the construction of the future trajectories. Any cultural system—be it personal or collective—can be understood only through its history<sup>5</sup>.

**Systemic view: axiomatic acceptance of interdependence.** The interdependence of human psychological worlds is the axiom in cultural psychology—here sampling need not represent a population, but reflects the cultural histories of the cases studied. There is no value of taking any “random” set of individuals from population, since the individual cases are supposed to reflect the range of variation not in the population, but in the ways in which specific adaptations to concrete conditions exist. Thus, a new concept is proposed—**Historically Structured Sampling (HSS)**. HSS utilizes the property of open-systemic phenomena—convergence at temporary equifinality points in their individual development.

<sup>5</sup> Here we paraphrase the point emphasized by Lev Vygotski—after his fellow paedologist Pavel Blonski—behavior can be understood only as history of behavior (van der Veer & Valsiner, 1991)



## Historically Structured Sampling (HSS): selection by histories

The notion of HSS relies heavily upon the notion of equifinality that originated in the general systems theory (GST) of von Bertalanffy (Von Bertalanffy, 1968). Von Bertalanffy pioneered the organismic conception of biology from which the GST developed. He regarded living organisms including human beings as not closed systems but open systems. Closed systems are considered not to depend upon their environments for their functioning. If phenomena in a particular science can be assumed to be of the kind of closed systems, the traditional sampling techniques (Figures 1-2. above) would be sufficient and there would be no need for developing an alternative like HSS is. Yet no biological, psychological, or social system can be reasonably conceived as closed—hence the need for HSS<sup>6</sup>.

On the other hand, open systems receive information and interact dynamically or exchange with their environment. Taking the concept of the open system into his theory, Von Bertalanffy (1968) outlined the principle of the equifinality as crucial for the open systems:

In any closed system, the final state is unequivocally determined by the initial condition: e.g., the motion in a planetary system where the positions of the planets at a time  $t$  are unequivocally determined by their positions at a time  $t_0$ . ... If either the initial conditions and or the process are altered, the final state will also be changed. This is not so in open systems. Here same final state may be reached from initial conditions and in different ways. This is what is called equifinality, and it has a significant meaning for the phenomena of biological regulation (von Bertalanffy, 1968; p 40).

The open-systemic nature of social and psychological phenomena has led to the need to consider complex events in their history. Sociologists' efforts at "event history analysis" (Blossfeld, Hamerle & Mayer, 1989; Yamaguchi, 1991) and developmental psychology's look at person-context analysis (Cairns, Elder, & Costello, 1996) are some of the existing recent efforts to move beyond the myopia for open-systemic nature in the traditional research habits.

### Equifinality

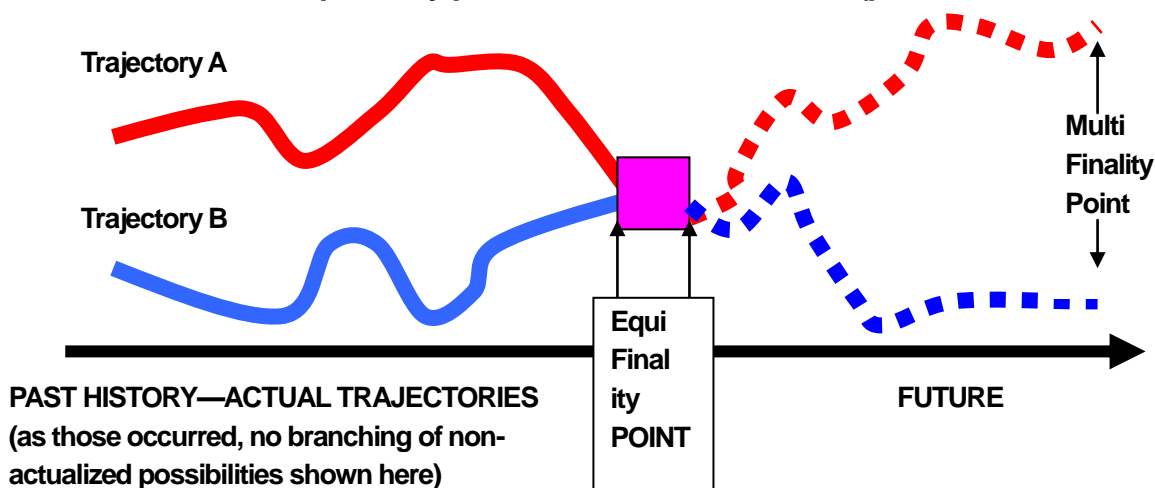
Equifinality means that the same state may be reached from different initial conditions and in different ways in the course of time. We propose to call the trajectory model such a Figure 7 as an Equifinality Trajectory Model. Equifinality is a general property of open systems. In the minimal case, the open systems dynamics entails the notion of individual trajectories (A and B) that may converge (at equifinality points), as in the Figure 7. They may diverge after passing through the equifinality point—leading to further multi-finality (see multifinality points in the Figure 7).

It is important to emphasize that equifinality does not imply sameness—which is an impossible condition in any historical system. Rather, it entails a region of similarity in the temporal courses of different trajectories. It is only by our conventional use of language that we easily consider similarity to be sameness (Sovran, 1992)—a move in language use that is unproblematic in the sciences where history is not relevant. In biology, psychology, sociology and beyond we only operate on the basis of functional similarities.

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<sup>6</sup> It is important to note that the decisions whether a given system is "open" or "closed" is an axiomatic one—where the centrality of the basic assumptions and phenomena connection in the methodology cycle (see Branco & Valsiner, 1997) is crucial.

**FIGURE 7. Equifinality point within irreversible time (past-to-future movement)**



There are only two fundamentally general equifinality points in each human life that are universally shared by all (birth, death). But in most psychological studies, these two points may be not investigated too often. There is, of course, the possibility of looking at the pre-natal developmental trajectories as the antecedents towards the varied trajectories of post-natal development as an example of utilization of the equifinality point of birth for developmental research (see Hepper, 2003). Similar uses of the second universal equifinality points in psychological research is limited only to the trajectories of arrival at the equifinality point—the biological realities set severe limits on any further speculations.

The equifinality point is a “point in-between”—it is both a place for temporary similarity in the life courses of the systems, and a bifurcation point for further development. It plays the central role in the selection of cases of developing systems in case of HSS. Any psychological states and/or life events in what researchers have interest are structured historically. Of course the equifinality point is defined by specific parameters on what the investigator focuses. The researcher decides which aspects of the historically organized system are the objects of investigation-- the EFP becomes a part of the conceptual scheme in the researchers' thinking.

An example of equifinality point in human development is the case of infants' beginning to walk independently. The usual—textbook-- depiction of such development is that of a linear sequence-- Infants begin to creep and crawl, then stand up and begin to walk. However, this picture simplifies the complex reality of open systems—that develop by non-linear trajectories. The usual trajectory of development of locomotion, it's not the only one (Valsiner, 2001b). As the work of Trettien (1900) showed, there exists another (less frequently) trajectory. Some infants never creep or crawl, but move from the sitting position to standing position, and from there-- to independent walking. And after beginning to walk, infants learn and acquire the many way of locomotion. So Independent walking becomes the equifinality point en route to becoming an adult-- both “crawling babies” and “sitting position babies” will equally get their licenses to drive car – where sitting position suffices.

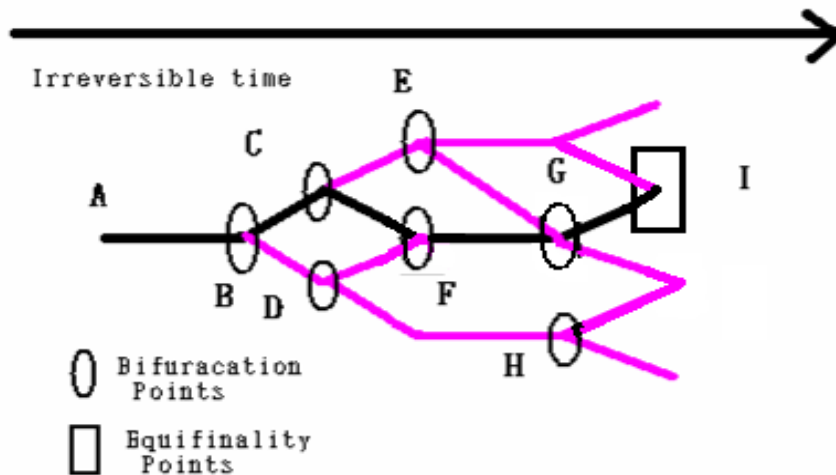
### **Obligatory Passage Points in the Equifinality Trajectories Model.**

There exist some additional basic concepts to depict this model. The model is based on the assumption that all historical phenomena move in time on their unique trajectories that at times converge at equifinality points. History occurs in **irreversible time** and the varied trajectories may entail **obligatory passage points (OPP)**—depicted in Figure 8. Irreversible time is the characteristic of real time never to repeat any happening of the previous time period. Time flows from an infinite past towards an infinite future (Valsiner, 2001b). Yet human being exist as finite organisms—living from birth to death and creating their own personal lives through cultural means.

To understand the diversity of trajectory of development, it is important to examine the passage

points that lead to EFP. Then another concept is needed to understand the trajectory—passage points. Before reaching the EFP, people experience many events and things. We call them passage points. Passage points are important events for subjects (or informants). And they are always –not anytime- bifurcation points.

**FIGURE 8. Depicting the Equifinality Trajectories Model** (modified after Valsiner, 2001b; p. 62)



In this figure “the rectangle I” is the supposed EFP on what researchers focus in their researches. For this EFP, there are many pathways to pass. “Ellipses B thorough H” are BFPs in this ETM. We can call them passage points. Of course, many passage points are both EFP and BFP, but main EFP should be focused along researches’ interests. Researchers can find many passage points. But no matter how many points we can find, the natures of all points are not equal. Some points are trivial, and the others are crucial. Some are inevitable, others suggested as if these were inevitable.

**Obligatory passage points** (OPP). Latour (1988) came up with that concept in the context of the sociology of science. In our course of development there are two types of OPP, indigenous one and exogenous one. The former includes species-specific biological transition points—such as cutting of teeth in infancy, menarche, or menopause. The exogenous set up by the environment and/or custom. The cessation of menstruation in women at times of hardship (“war-time amenorrhea”) is a result of environmentally produced transition phase. Adolescent initiation rituals that exist in many societies are culturally set exogenous OPPs. So is the obligatory formal schooling—children are sent to school as a socially set OPP that lasts for years.

By focusing the research theme, some points other than birth and/or death are found to be essential. For example, in the research of life course of infertility woman, hetero-marriage (whether legal or de-facto) is an OPP. Someone who never wants to make his/her own new family, infertility is a negative blocking biological factor that disallows the move through species-specific (reproductive) OPP.

### **The practice of sampling: HSS**

Up to now we have outlined the theoretical landscape for making sense of cultural-psychological phenomena as open-systemic, multi-trajectory historical processes. This only sets the stage for defining a fitting way to solve the problem of sampling. Starting from the analysis of past trajectories of the personal life trajectories and their contextual structures at every EFP and BFP – seeing what OPP kinds of demands existed at the bifurcation points—the researcher moves to select the participants on the basis of theoretically meaningful past histories. Note that all the persons

singled out for study **are at the given moment in a similar state** (EFP), what makes the difference is their past histories and their concrete organization (see contrast of Trajectory A and Trajectory B in Figure 7, above). Using various methods, these past trajectories are analyzed for all potential participants in the investigation. Triangulation of methods is necessary. Preliminary open-ended questionnaire, intensive interview data, historical knowledge, theoretical knowledge and even common sense are all useful for empirical elaboration of the ETM as the basis for HSS.

Thus, OPP is the basic structure and/or canalization system of life trajectories upon which our sampling technique—HSS—is set up. The act of HSS entails

- (a) locating the relevant equifinality point (EFP) --as well as all relevant OPPs-- in the generic map of trajectories necessarily present for the generic system of the processes under investigation (theoretically based activity),
- (b) empirical mapping out all particular cases-- systems open to study that move through these points, and
- (c) comparison of different actual trajectories as these approach to the equifinality point by superimposing onto each trajectory a pattern of theoretically meaningful “range measure” --derived from (a)-- that specifies whether the given trajectory fits into the realm of selectable cases.

HSS thus maps the individual histories of particular systems onto the wider general system of possible trajectories of arrival at the equifinality point. HSS sets up contrasts between different trajectories—and between the same trajectory and its possible future under new OPPs beyond the EFP. It calls for an analysis of the sets of possibilities for the given system to proceed through, and sampling of that particular set out of all that are known, for further sampling of individual cases which have reached that selected point.

Such sampling of the cases—based on the past historic trajectory differences **that are currently absent** (all systems are in the same equifinality area at the time of sampling) is the opposite of traditional sampling of contrasting groups based on outcome data. In HSS the traditional notion of “experimental” versus “control” **groups** is not applicable. Instead, all the cases selected through HSS—who are currently in a specified similar EFP—can be contrasted with one (or more) **virtual comparison condition** (VCC)—conditions which **clearly are absent now**, but which **could have been realistic had the persons involved at relevant BFPs in the past moved in different directions** than they actually did (see the example of coping with infertility, below). It is the personal history of not reaching the VCC state—contrastive state to the current actual EFP—that is relevant for the researcher who uses HSS. HSS operates with focusing on the contrast of what historically did happen, and what potentially could have happened—but did not.

HSS is thus capitalizing on the “life courses” of the objects of our investigation by selecting various cases on the basis of their movement through relations with environments. Yet it is not another label for life history—it is a technique of sampling for the study of some other—prospective—processes of cultural development that have not yet emerged. HSS may set the stage for prospective longitudinal observation of what would emerge in “natural contexts”, or for a microgenetic intervention experiment. Likewise HSS can be the basis for social intervention in a community (based on the HSS verified past movements in the community), and in clinical settings. HSS is a tool for researchers that replaces the reliance on the axiomatically accepted notion of “random sampling” in particular (as there is no “randomness” in history, but move from uncertainty to certainty) as well as the notion of “sample” as a set out of a bigger set (“population”). HSS is based on different axioms than the ideology of “random sampling”—systemic and autopoietic nature of cultural phenomena, unique construction of life experiences in irreversible time, and relative structure of the landscape of life course (by structure of OPPs, and EFPs/BFPs).

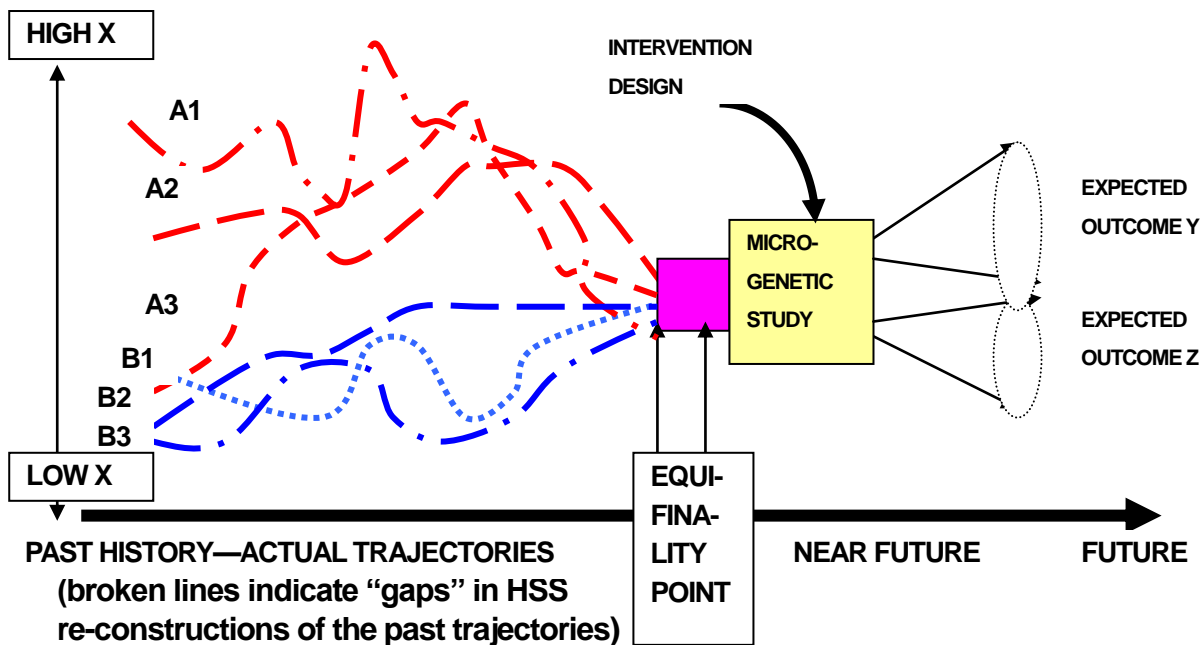
### Possible applications of HSS in research practices

Given the needs of cultural psychology, it is useful to understand the three levels of the process on the irreversible time; i.e., history, life course development and decision making. Three levels of organization of phenomena at which HSS is applicable are:

1. macro-genetic level—history of a society or social group, or institution
2. meso-genetic level—human individual life course development (ontogeny)
3. micro-genetic level-- decision making in semiotically over-determined everyday life situations.

The application of HSS unites different levels. Thus, sampling by HSS takes place at one level, while the study to be conducted occurs at another. Thus, by selecting persons within a society that undergoes dramatic change (**macro-genetic level HSS**) it becomes possible to study ongoing **meso-genetic** (ontogenetic) level changes. Likewise, if HSS is made at the **meso-genetic level** (e.g., selecting persons of different life course trajectories, who have all reached the given equifinality point, e.g. have all reached a school, or an adolescent transition ritual place) the door is opened to the **micro-genetic study** of the relevant processes. The HSS **always occurs at one level more general than the actual study** for which the sampling is done, is to be conducted.

**FIGURE 9. The HSS as basis for a study of emergence**



If one is to compare HSS with the traditional sampling procedures, the difference is in the acceptance of directionality of development in case of HSS. Different systems may be selected as examples of basically opposite movement at the more general (macro- or meso-genetic level) in order to test the properties of their further development at one level lower. Figure 9 provides a generic example.

HSS leads to the selection of two sets of individual systems by their similar trajectories (A1, A2, A3 and B1, B2, B3) that all at the present time are located in the equifinality zone. All of these cases

have been analyzed as to their past trajectories—and any reconstruction of this kind is uneven in its access to the life course as it actually happened. Yet it is documented how their ontogenic life courses fluctuated over time, on the dimension HIGH X <> LOW X. Even if the specific reconstructions of the past are vulnerable to selective recall and constructive confabulation, its directions between different BFPs can be ascertained.

Based on HSS, each of the selected systemic cases is subjected to a microgenetic intervention procedure, the result of which is expected to be further life course trajectories in directions Y and Z. Such study entails the setting of new kinds of hypotheses of the kind—“GIVEN HISTORY {range A} and INTERVENTION Z the individual cases are expected to proceed in direction Z (or Y) with specifiable ranges of X.” Note that what is absent in such hypotheses building is any notion of “control group”—since all hypotheses are to be tested within a single case, the trajectories discovered in the course of HSS operate as “control conditions”. This orientation is analogous to behavioral single-case designs.

### **How trajectories are made: the landscape model**

Trajectories are possible only in models where time is retained. A point has no direction, a sequence of two points forms a line—which can be interpreted as having a direction—and becomes a trajectory. Not surprisingly, it is in the realm of developmental sciences—biology or psychology—that the notion of trajectories is theoretically important.

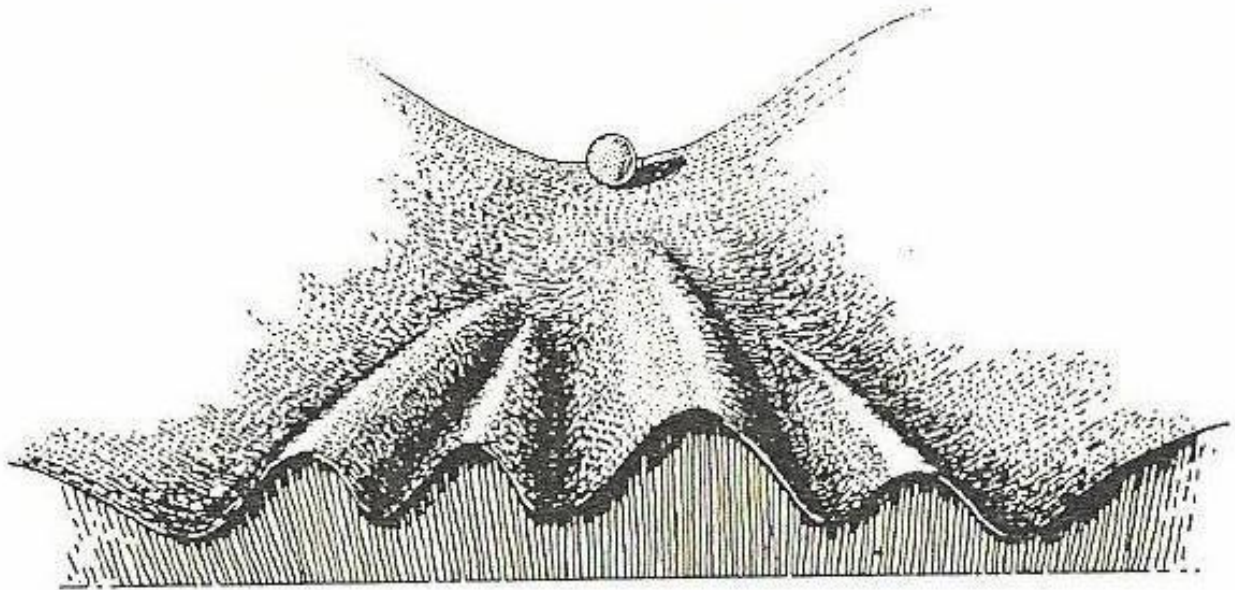
Trajectories can be posited without (see Figure 9, above) depicting their generative context— or with it (see Figure 6 above). The latter entail a field model where directional vectors (trajectories) are depicted within the context of a field parts of which they are. Perhaps the most widely known example of the latter is Waddington’s (1956) classic epigenetic landscape model of the linking of genetic and environmental factors in development. In Waddington’s own words,

One can make a mental picture... of development of a particular part of an egg as a ball running down a valley. It will, of course, tend to run down to the bottom of the valley, and if something temporarily pushes it up to one side, it will again have a tendency to run down to the bottom and finally finish up in its normal place. If one thinks of all the different parts of the egg, developing into wings, eyes, legs, and so on, one would have to represent the whole system by a series of different valleys, all starting out from the fertilized egg but gradually diverging and finishing up at a number of different adult organs. (Waddington, 1966, p. 49)

Waddington’s interest was in the explanation of how biological organisms’ morphogenesis takes place. After considerable search for a visual representation of that process (see Gilbert, 1991, for a detailed history of his schemes), he ended up with a model as depicted in Figure 10.



**FIGURE 10. Waddington's "Epigenetic landscape" (Waddington, 1966, p. 49)**



This model describes the nature of trajectories as diverging—the whole landscape broadens toward the end. This fits the biological differentiation of morphological structures (e.g. where the finally formed body parts do not “grow into” one another). From the viewpoint of HSS this landscape model is limited as it fails to include equifinality points (while being rich in bifurcation points).

If psychology or other social sciences were to consider an analog of his "landscape," both bifurcation and equifinality points need to be included. Furthermore, if the “ball” is the equivalent of the developing system in an open-systemic way, its relations with the landscape are not those of mere direction, but include mutually active role of both—the “ball” is “digging its way” thus making the valleys, while the system of existing valleys resists, and acts upon the “ball” attempting to direct it actively towards one or another location of “digging”.

Given the absence of EFPs in Waddington's model, it represents only one example of trajectory-based theoretical thought in history of biology. Waddington's model serves merely as a reminder of a class of models that include the idea of trajectory but has no unification point for the sake of selection of developing systems for their baseline contemporary similarity.

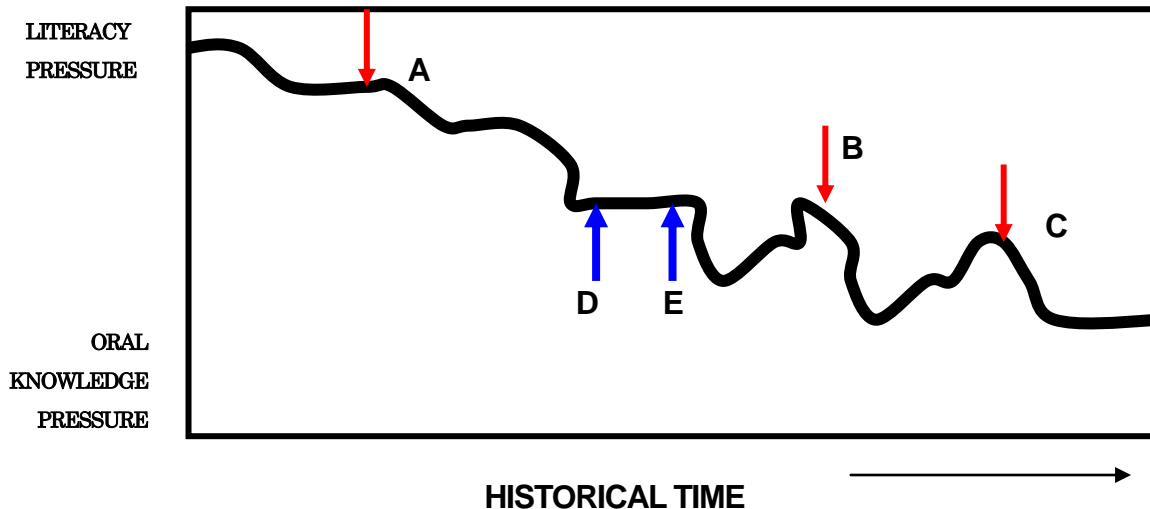
### **Examples of empirical projects where HSS could be appropriate**

Comparison of persons from different societies acquires a new meaning with the adoption of HSS. In terms of cultural histories, we look at the transition from the oral to the written literature traditions in the histories of two societies—Japan and Persia. Both—by the present time—have reached the equifinality point of the focus on the written literature in the formal schooling, yet by different historical trajectories if we take a historical view of a time frame of something like 2000 years.

Yet the different histories of the two societies lead individual persons of the current generation—while similar in their selected equifinality point (focus on written texts in formal education)—to different personal histories of arriving at that point, and different potentials for moving further ahead. In Figure 11, below, the right arrow points the alleged position of the Japanese condition. In Japan, written literature prevails. But for example, present condition of Iran is different from Japan. Young adults (e.g. 30 year olds) in Iran can be expected to be much more familiar with oral literature (the left arrow) than their counterparts in Japan. This inter-societies difference can be found from looking

at the cultural histories of each country prior to any study of any person in each. The continuity of the generic focus on oral<>written communication interchange in the histories of the societies sets up the expectations for what kinds of *foci* one can find within the persons of the current generation. However, the point of HSS is not to demonstrate that history of a society determines the mentality of its people. That would amount to linguistic/cultural determinism that has governed the thinking of social minds in the Occident (Valsiner & van der Veer, 2000).

**FIGURE 11. Socio-historical pressures (arrows) upon the proportional prevalence of written (versus oral) transfer of cultural knowledge**



The scheme (Figure 11) shows how a society at different periods of time may prioritize the reliance of its members on written or oral communication of knowledge. This macro-sociological history can be plotted as to the proportions of oral/written transfer at different periods, with pressures towards increase in either the share of literacy (arrows A, B, C) or that of oral transfer (arrows D, E) at different times. For example, in the historical periods where main communication means were those of writing (and exchanging) paper-based documents, the pressures towards increased reliance on writing and reading can be observed. Thus, in the pre-Gutenberg era Europe, the majority of communication was based on oral communication channels. Together with the invention of the printing press that changed—and the additional social change of Lutheran Reformation delegating to the individual persons the most important communication task (i.e., that of communion with the God through reading the Bible by oneself) increased the pressure of the literacy to take over the dominant role from the oral knowledge transfer. Similarly, one may wonder if a reverse process is going on now in the 21<sup>st</sup> century—the age of cellular telephones, music-TVs, shredding machines, and saving knowledge in the virtual rather than physically tangible forms. Reading and writing becomes replaced by mouse-clicking, and relevant information on computer screens is no longer organized for reading, just for detection and reaction to pre-given choices.

Figure 11 gives us a macro-historical background for HSS. Different persons within a society at the given time occupy different social role positions in relation to the oral/written literature relation—some (scholars) operate primarily within the written tradition, others (bards)—within the oral tradition. This would be similar for example both in Japan and in Iran in our time. Where the differences in the histories begin to play a major role is at the transition from the dominance of one to that of the other. Children entering formal education systems move from the dominance of one to the other. Their personal trajectories of the past encounters with the written and oral literatures can be found out from interviewing their caregivers when the children enter school. The results of such interviews will let the researcher chart out the systemic trajectories up to the selected equifinality point.



So, here the HSS procedure makes use of two levels—macrogenetic (societies' histories) and ontogenetic (individual children's developmental trajectories). The study of the making of the future can now proceed at the microgenetic level—as a kind of teaching/learning experiment in the classrooms. It is expected that the children—in the context of new literacy task—will bring their past personal-cultural histories to function as tools to adapt to the educational setting. For many of the Iranian children it may mean the need to confabulate—create oral “story” around a writing task. For many Japanese children, the way to handle the microgenetic task may reflect their pasts.

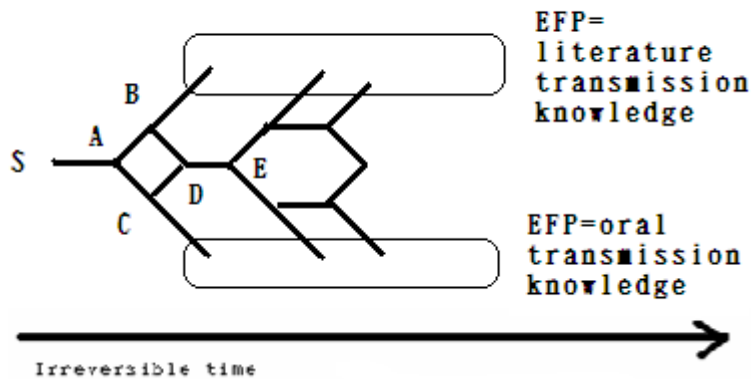
Yet children do not just follow the guidance of the past—they re-construct it, and do it largely by acting in some form of contrast to their pasts. Resistance to learning can lead to learning (Poddiakov, 2001), or—work on one's deficiencies can lead to over-compensational excellence in precisely those areas. Hence the HSS leads to the possibility to study individual cases whose personal histories differ cardinally from the others in the same category. For instance, some children in Japan may have “Iranian-like” personal-cultural histories when it comes to the uses of literacy texts, and some Iranian children would have histories similar to those of Japanese children. These single cases – let us call them “cross-over cases”-- are identified by HSS and can be studied in the microgenetic procedure.

From the individual's perspective, we can consider two historical trajectories in different societies. We-- human beings-- cannot choose the birthplace. It's very first point, any baby enters the realm of oral communication—people around him or her making speech sounds that only slowly begin to make any sense. But, suppose that one baby is in the “oral transfer of knowledge” dominant society and another is in the “written transfer of knowledge” dominant society. So, babies in the former society tend to be in the oral communication culture and babies in the latter society tend to be in the oral communication culture. It's important for us to recognize that both oral and literal societies are equally equivalent for babies. We should not order the two societies—sure, in Figure 11 we depicted the literal society might be superior than oral society, but it reflect the developing order of two ways of communication. If one baby is born in the perfect oral communication society and is not promoted to study literacy, it doesn't mean his/her inferiority. We can set up the EFPs on the communication style such as oral and literary in our theoretical schemes, but these are both usable by people in their everyday lives. We may also call them as **polarized equifinality points** (PEFP). PEFPs operate in “doubles”—they unite the opposites between which the developmental or historical processes proceed—guided by the promotional field one level more general than the phenomena under investigation.

Obviously, babies are not ready for written communication right after their birth. At the first Bifurcation Point “A”, some go up to “B” where “written transfer of knowledge” dominates in the society, and the others go down to “C” where “oral transfer of knowledge” is dominant. In the former, children may start to learn reading and writing even at the kindergarten. In the other, they might start it late—if at all. After all, human cultural transfer occurred in pre-literate societies as well as literate ones—albeit with different role played by memory functions (Vygotsky & Luria, 1993, chapter 2)

In Figure 12, “D” is the supposed Obligatory Passage Point (OPP) of entering elementary school. Many societies today force children to go to elementary school. “E” is another BFP. One child may quit to study at school in “written transfer of knowledge” dominant society because of one's health problem. And another child in “oral transfer of knowledge” dominant society should quit the studying because of one's gender. For instance, girls have been underrepresented in formal schooling contexts in many societies—while women's role in the informal education context in any society has been central.

**FIGURE 12. The system of Polarized EFP for the case of people in-between the Oral and Written texts-dependence context—and the system of trajectories.**



**Re-considering ontogeny of tactile contact.** We can consider a classic “intervention design” known in child psychology—the role of extra tactile contact between mothers and newborns in further development of the infants. In the usual habit of psychology, studies in child psychology have focused on something considered as “independent variable” at time  $t_0$  as “having an effect” on some “dependent variable” at  $t_1$ . For example, Klaus & Kennell (1976) were pioneers of claiming the importance of early mother-baby tactile contact for later development. Yet such selection of “independent” and “dependent” variables denies the systemic organization of development both before the earlier antecedent condition (increased tactile contact) and from the experiences within the interval until the “dependent variables” were investigated. The act of giving mothers and newborns more time (than US pediatric wards allowed in early 1970s) to sleep with one another cannot in itself operate as any “independent variable” to which causal properties can be attributed. Instead, it is a newly introduced life course event—a short period of stability of contact—that is part of the history of the life course-- an equifinality point (or period) -- for all the mothers and babies included in the Klaus & Kennell research program. Correlational analysis of finding relations between the “earlier” and the “later” indicators at the level of the sample do not represent the life-course processes that are taking place. The “effects” of neonatal tactile contact are of systemic kind—instead of one form of such possible “effects” there are at least five possible ones (see Blossfeld & Rohwer, 1997, p. 368). Any correlational (or regression)-analytic finding of “an effect” is completely blind to which of these 5 (or other possible) forms of these “effects” might be in place. The early mother-child bonding hypothesis is one of many mythical hypotheses that proliferate in psychology—supported by the common sense ideology that guides psychologists’ thinking. Actually, Klaus & Kennell’s early bonding hypothesis had not been borne out by subsequent research. So they changed their view (Schaeffer, 1998, p. ????)—instead of assuming a single process (tactile contact → future positive development) they accepted the dynamic and systemic nature of the “tactile effects.”

How would the Kennel and Klaus research tradition fare from the perspective of HSS? Their intervention—provision of extra tactile mother/baby contact opportunity—introduced an EFP to all of the participants in the “experimental groups”. In contrast, the “control groups” – mother-baby pairs without such event—did not share any pointedly similar experience. The personal life histories of each mother and her baby – if analyzed in terms of the trajectory through pregnancy and birth process—would be the basis for our HSS effort. The follow-up of each mother/baby pair after the extra tactile contact would entail an analysis of other relevant life course episodes in the subsequent lives of the mothers and babies: processes of breast-feeding, processes of exploration of the environment in

toddlerhood, etc. The comparisons between individual cases would be made based on the distinctions of their HSS trajectory histories (see Figure 9, above). The “control group”—where mothers and babies were **not** subjected to the extra tactile contact—would be irrelevant for the analysis of the construction of further trajectories **given** the EFP experience. Through HSS, the differences of the life histories that led to EFP are expected to make further difference—**not** the presence **versus** absence of the EFP at the given time.

Our example here illuminates a more important general point. In the strategy of conventional psychology tends to regard **attributes** of subjects (or informants) as important for the generalization of results. “Controlling” the variables such as nationality, sex, age-- and many others-- is expected to guarantee the objectivity and/or validity of the research. Yet no researcher can actually “control” psychological “variables” since those have auto-regulatory properties—the person acts in ways that neutralize or resist the efforts of the researcher to systematically vary the “variables”. Some of the features referred to as “variables” in psychology are merely indices of fixed **status quo**—so, gender (male/female) is not controllable by way of experimenter’s intervention, but only in a manner of speaking (recognizing existing gender differences). Interestingly, the notion of “controllable variables” is easily generalized in the minds of researchers—these “variables” become freed from their contextual dependencies, and of the time.

Using the HSS, wartime can be the point of sampling and we can see the diversity of trajectories which subjects experienced at this equifinality point with unraveling the interaction between human and environment. Here we can see the covariation pattern or configuration of cultural variables (Kojima, 1997 p. 318). Such covariation does not reveal causes of development (which are systemic) but allows for an overview of the high variety of forms in organism-environment relations.

Contemporary life-course sociology provides examples of equifinality points in the social domain (economic depression, war) that are inevitable for people (especially young people) to move through in their development. Because of human beings as an open system interact with their environments, sometimes almost all people in same environment were affected one big event such as a war and disaster. The experiences of such an equifinality point are similar (not same) in almost all people, but the influences tended to be different (not similar). As Shanahan, Valsiner, and Gottlieb (1997) pointed out that, in biology and psychology, interest in time had been limited to a concern for development as “temporal accretion” or “critical periods”. If we use the concept of equifinality to describe the interaction of people in any age with social events, it is possible to understand diversities in people in any age. Essentially, equifinality point is also a bifurcation point—for anything that is to come in the move from the present to the future (e.g., through interventions--Figure 9, above).

**Same event—different personal experiences.** It is also an example of mesogenetic HSS that the different levels of ontogenetic development can operate as “trajectories” of entrance to the same life experience—but from different perspectives on the life-world. Lev Vygotsky’s example—from his clinical experience—of the same episodic event (mother’s drunken state) being experienced by her three sons is an example of how HSS can be used in the system of interrelated systems (within a family):

The essential circumstances were very straightforward. The mother drinks and, as a result, apparently suffers from several nervous and psychological disorders. The children find themselves in a very difficult situation. When drunk, and during these breakdowns, the mother had once attempted to throw one of the children out of the window and she regularly beat them or threw them onto the floor. In a word, the children are living in conditions of dread and fear due to these circumstances.

The three children are brought to our clinic, but each of them presents a completely different picture of disrupted development, caused by the same situation. The same circumstances result in an entirely different picture for the three children.

As far as the youngest of these children is concerned, what we find is the commonly encountered picture in such cases among the younger age group. He reacts to the situation by developing a number of neurotic symptoms, i.e. symptoms of defensive nature. He is simply overwhelmed by the horror of what is happening to him. As a result, he develops attacks of terror, enuresis and he develops a stammer, sometimes being unable to speak at all as he loses his voice. In other words, the child's reaction amounts to a state of complete depression and helplessness in the face of this situation.

The second child is developing an extremely agonizing condition, what is called a state of inner conflict, which is a condition frequently found in certain cases when contrasting emotional attitudes towards the mother make their appearance... ambivalent attitude. On the one hand, from the child's point of view, the mother is an object of painful attachment, and on the other, she represents a source of all kinds of terrors and terrible emotional experiences... The second child is brought to us with this kind of deeply pronounced conflict and sharply colliding internal contradiction expressed in a simultaneously positive and negative attitude towards the mother, a terrible attachment to her and an equally terrible hate for her, combined with terribly contradictory behaviour. He asked to be sent home immediately, but expressed terror when the subject of his going home was brought up.

...the third and the eldest child presented us with a completely unexpected picture. This child had a limited mental ability but, at the same time, showed signs of pre-cautious maturity, seriousness, and solicitude. He already understood the situation. He understood that their mother was ill and pitied her. He could see that the younger children found themselves in danger when the mother was in one of her states of frenzy. And he had a special role. He must calm his mother down, make certain that she is prevented from harming the little ones and comfort them. Quite simply, he has become the senior member of the family, the only one whose duty it was to look after everyone else (Vygotsky, 1994, pp. 340-341)

While Vygotsky himself found the situation of all three children traumatic (which it obviously was), here we can look at the example as an extension of the usefulness of meso-genetic HSS. By sampling of families of multiple members—children, or other adults (in extended families) — the researcher can investigate the contrasts between mutually connected parts of the social organism (system), where the personal histories of each member are known. Life-course sociology does not maintain this kind of systemic unit, but separates the persons of different backgrounds into traditional “samples” that go through similar experiences. However, in terms of cultural psychology, these experiences are personally constructed—on the basis of the shared social history.

**An example at the micro-genetic level.** HSS is useful for using the decision making process of the subject in the life course in the past to study the re-construction of the future. Yet the HSS perspective transcends the decision-theoretic legacy of psychology in two ways. First--most of psychological works treat the “one shot” decision only. Even if process is being emphasized—such as in Cognitive Dissonance Theory (Festinger, 1957) -- the decision making process remains a “one shot” deal, not a trajectory of decisions in a sequence.

The reason why dissonance **after** a decision has been made should be focused upon is needed as we look at the life processes at large that cannot be reduced to the episodes that Cognitive Dissonance Theory covers. So people after decision must cope with cognitive dissonance, but actually in daily life situation, not so little people try to re-make the previous decisions. Everyday life situation is under redundant control mechanism (Valsiner, 2001b), so decision making tends to be semiotically over-determined. In addition, we have many things to decide to do or don't—everyday decisions are of the kind of a sequence of ill-defined problems one feeding into the next. They are not independent,

discrete problems that have simple solutions—each solution feeds forward to the emergence of a new problem.

Ironically, the stronger the exogenous settings (institution, custom and so on) are, the weaker people feel the pressure to make decisions. Entering to primary school is one of the examples. Contemporary citizens never bother whether they make children enter the primary school or not. But in everyday life situation, we have some kind of “degree of freedom” for decision making — “do or don’t? If do, when and how?” For example, mothers may bother that when do they start to give pocket money to their children.

### **Culture and personal life trajectories**

Our introduction of HSS as a tool for investigation leads to selecting persons who face sequential, interdependent decisions—such as young women’s decisions how to wear make-up. The act of changing the appearance of the face has long history in culturally symbolic body painting and the making of ritual masks. These cultural-historical forms set the stage for our contemporary cosmetics use practices that function for beautification purposes.

Here it would be fitting to mention recent studies using the HSS and the equifinality trajectories idea (Sato, Yasuda & Kido, 2004). Yasuda (2004) approached the infertile experiences of married women in Japan looking at their reconstructed histories of moving between the PFEP containing FERTILITY and INFERTILITY as the two opposites within the same whole. Because it’s very difficult for graduate students to recruit such participants, all but one were recruited at the internet BBS of an association of adoption. The restriction of participants recruit method is not considered a “sampling error”, but a part of the HSS that is determined by the participants themselves (their motivation to participate in the study on the topic of their life-course desire—getting children).

First, Yasuda (2004) ambiguously treated the infertile experiences as the EFP. But the restriction of participants made her to focus on the two polarized results of infertile experiences, i.e., couple with children and couple with out children. In this study, equifinality point is not necessary defined a one single point. If a researcher tries to investigate the married women’s ETM by HSS, both having children and having no children should be considered as equivalent equifinality points. And there are different trajectories for equivalent equifinality points. We again call such equifinality points as equivalent and/or polarized equifinality points. EFP depends on the researchers focus. If one wants to investigate the stability of marital couple’s life, the presence or absence of children is only one of the passage points and other EFP should be set.

After setting up the Polarized EFP for her study, Yasuda (2004) highlighted different OPPs in the field. The first OPP is the point when infertility treatments couple be aware of the adoption system as a solution that they could use. Yet that is an exclusive option--persons who expect to adopt must quit the infertility treatments in Japan. So this is the second OPP. The association of adoption recommends the couples to give up the infertility treatments before engaging in the adoption procedure. So the stopping the infertility treatments are “institutionalized” OPP for adoption.

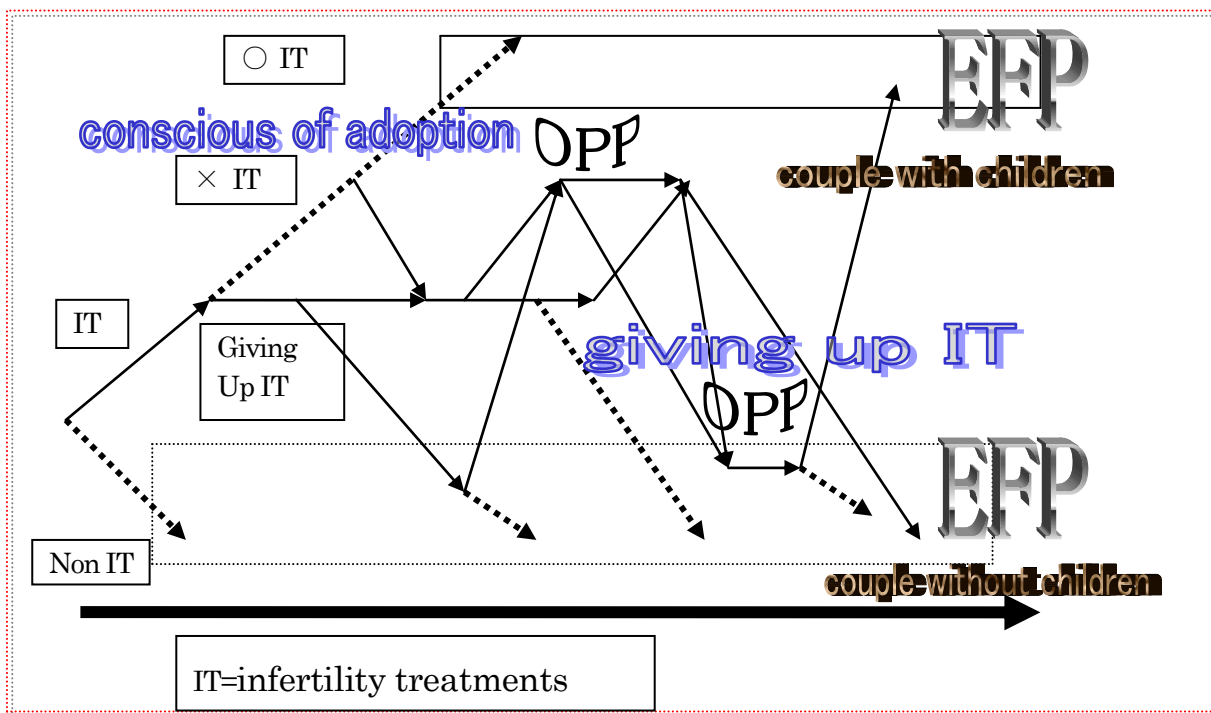
Here, EFPs and OPPs were hypothetical ones. She conducted the semi-structured interview with participants. Participants were nine cases (six females and three couples). After writing down the transcripts of 9 records, Yasuda analyzed the transcripts of the oral narratives that were obtained by the interview. So she could get the 9 life stories about the women with infertility treatments. She struggled to map the events and psychological status of 9 participants with irreversible time. The network of trajectories for all nine cases are in Figure 13. Even though medical definition of infertility is rather difficult to prove—it is a diagnosis based on documented **non**-happening of something expected (pregnancy), once people are conscious about that label, they usually reflect upon it through two options-- “Let it be” or “try infertility treatments”. So they see it as a bifurcation point for their life course.

This look at the multitude of possible and actualized trajectories makes it possible to understand the trajectory of infertile experiences from the viewpoint of persons who chose the infertile

treatments and took the adoption into consideration. Both “being conscious of infertility” and “taking the adoption into consideration” are not only personal experience but historically structured ones. Actually, this figure looks different from deductively derivable formal models of trajectories unfolding within the field of PEFP {FERTILITY<->INFERTILITY}. Yet it reflects the real trajectories of movement of the women who were involved in the study. In this figure, solid lines express the possible and real courses. And dashed lines expressed possible (supposed) but not captured this research.

If the picture in Figure 12—depicting different ontogenetic trajectories of the equifinality trajectories model -- is used as a basis for HSS, one could study women of different trajectories—those of direct and repeated efforts towards arriving at fertility (repeated infertility treatments), and others with “up-and-down” trajectories (still ending up in efforts of child-bearing). It would be reasonable to expect that any microgenetic next event in their life course—for instance, their personal ways of relating to next episode of infertility treatment—would be organized differently by way of their personal cultures (Valsiner, 2000).

**Figure 13. Observed trajectories in 9 women moving towards the EFP of having children in contrast to not having children.**



**General Conclusion.**

In any psychological research effort, sampling is inevitable. Actually, many kind of sampling methods are used in psychology. We have expanded the notion of sampling to include its historical-developmental version—HSS. It is an alternative to the usual way of random sampling.

The difficulty of random sampling had been elaborated in this chapter. Its reliance on the assumed “randomness” of the singular acts of selection of persons from population into “samples”, and its in-built overlook of the person-environment interaction (Figure 6, above) are sufficient reasons to refrain from using such sampling techniques in cultural psychology. However, after demonstrating the misfit of the traditional technique we needed to develop a more promising alternative—and our notion

of Historically Structured Sampling (HSS) is meant as such. Aside from being open to history and uniqueness of the life course, it is also an example of theoretically based sampling. Psychology at large has moved away from theory-based empirical efforts—much to its epistemological detriment. Our hope is that HSS in cultural psychology will restore the centrality of theory.

There are also practical matters. In any real-life situation where the investigator operates, access to the phenomena is institutionally constrained. The researcher may be in a position of not just being unable to choose the participants—but even not choose the institution where the potential participants are socially embedded. If researcher wants to enter one high school, it is not the researcher but the high school administrator—teacher or director—who makes the decision. The strategy of HSS may render this obstacle less dangerous to research—even if one high school rejects the research; another school may help the researchers to study. Sampling like this is not random, but not capricious. From the perspective of HSS, any school of similar background constitutes a EFP. So it's worth studying whenever the access is possible. Contrasting such study with a study involving a large number of college student questionnaire responses is not worthwhile. Sampling such large study is convenient and capricious—and far from the unreachable traditional ideal of “randomness”.

Furthermore—a person is not the pile of traits, or an automation that provides answers to vaguely formed items of personality questionnaires and surveys. A human being—or a social group, or community— as an open system lives with cultural historical events. In its history different potential events might happen (at bifurcation points), but are either made not to happen, or they just do not happen. The focus on HSS brings into our empirical research practices a contrast much discussed by philosophers, but not implemented in empirical research—between **potential** events and **actual events**. HSS is based on the contrast of the real (what did happen, in the past) and the functional non-real (what could have happened at the particular bifurcation points, but did not—White, 1972).

How will cultural psychology's knowledge base be improved by use of HSS? We think HSS will have a couple of implications like as Freud's theory has at least three implications to psychiatry, psychology and our life-- aetiology of mental disease, therapeutic method and the theory of human development. The HSS should be the theory for sampling in psychology—by integrating the three levels of historicity, i.e., macro-, meso-, and micro-geneses. It lives up to the general claim that psychological systems can be studied only through the history of their emergence and trajectories to the present state. Depicting the ETM makes us possible to grasp the trajectory with irreversible time.

Lastly the HSS – based on ETM trajectories-- helps the researcher to identify the persons who are involved in important life decisions. Consider the sorrow and/or trouble of a mother of mildly mentally handicapped children. She could select the “normal” class or “special” classrooms as her EFP for the child's education. She may have selected the latter, but has been worrying about ever since. The HSS based research helps psychologists to advise such mother to mitigate her sorrow and/or trouble. Because, either “normal” or “special” classroom ought to lead anyone to same equifinality points later on. HSS allows to see different historical opportunities for further development beyond each EFP. Similarly to the service to parents, HSS based knowledge would support the special education teachers to arrange the environment differently for children of unusual pasts at the equifinality points.

The HSS trajectory need not assume linearity and/or uni-dimensional nature of the life course. Although the HSS started from the criticism to sampling method of developmental psychology, the developmental theory derived from the HSS have a power to change the epistemology of developmental psychology. HSS restores the central role of time—duration of life forms—to the study of social and psychological systems. **Behavior of such systems—in the widest sense— is only understandable as the history of such systems**—a point made in the 1920s by the Russian paedologist Pavel Blonskii that fascinated Lev Vygotsky but failed to gain ground in psychology in subsequent decades. Perhaps we are now in an OPP for the social sciences to consider the historicity of the phenomena we study in an internally coherent way—rather than follow the preaching of missionaries for the “right methods” in science. The latter are normative claims—basically power



assertions—which may lead psychology astray in its complicated efforts to make sense of human beings.

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## References

- Blissfield, H.-P., Hamerle, A., & Mayer, K. U. (Eds.) (1989). *Event history analysis*. Hillsdale, N.J.: Erlbaum.
- Blossfeld, H.-P. & Rohwer, G. (1997). Causal inference, time and observation plans in the social sciences. *Quality & Quantity*, **31**, 361-384.
- Branco, A. U., & Valsiner, J. (1997). Changing methodologies: A co-constructivist study of goal orientations in social interactions. *Psychology and Developing Societies*, **9**, 1, 35-64.
- Cairns, R. B. (1986). Phenomena lost. In J. Valsiner (Ed.), *The individual subject and scientific psychology* (pp. 97-111). New York: Plenum.
- Cairns, R. B., Elder, G. & Costello, E.J. (Eds.) (1996). *Developmental science*. New York: Cambridge University Press.
- Chaitin, G. J. (1975). Randomness and mathematical proof. *Scientific American*, **232**, 5, 47-52.
- Cole, M. (1996). *Cultural psychology*. Cambridge, Ma.: Harvard University Press.
- Diriwächter, R. (2004). *Völkerpsychologie: the synthesis that never was*. *Culture & Psychology*, **10**, 1, 85-109.
- Festinger, L. (1957). *A Theory of Cognitive Dissonance*. Stanford, CA : Stanford University Press.
- Gigerenzer, G. (1993). The Superego, the Ego, and the Id in statistical reasoning. In G. Keren & C. Lewis (Eds.), *A handbook for data analysis in the behavioral sciences: Methodological issues* (pp. 311-339). Hillsdale, N.J.: Erlbaum.
- Gigerenzer, G., & Murray, D. J. (1987). *Cognition as intuitive statistics*. Hillsdale, N.J.: Erlbaum.
- Gilbert, S. F. (1991). Epigenetic landscaping: Waddington's use of cell fate bifurcation diagrams. *Biology & Philosophy*, **6**, 135-154.
- Hepper, P. (2003). Prenatal psychological and behavioural development. In J. Valsiner & K. J. Connolly (Eds), *Handbook of developmental psychology* (pp.91-113). London: Sage.
- Kindermann, T. & Valsiner, J. (1989). Strategies for empirical research in context-inclusive developmental psychology. In J. Valsiner (Ed.), *Cultural context and child development* (pp. 13-50). Toronto-Göttingen-Bern: C. J. Hogrefe and H. Huber.
- Klaus, M.H. & Kennell, J.H. (1976). *Maternal-Infant Bonding*. St.Louis: Mosby
- Kennell, J. H., Jerauld, R., Wolfe H., et al. (1974). Maternal behavior one year after early and extended post-partum contact. *Developmental Medicine & Child Neurology*, **16**:172
- Kojima, H. (1997) Problems of comparison. In Tudge, J.,Shanahan, M.J., Valsiner, J. (Eds.), *Comparisons in Human Development - Understanding Time and Context* (pp. 318-333), Cambridge University Press
- Latour,B. (1988). *The pasteurization of France*. Cambridge, MA. Harvard University Press.
- Matsuzawa, T., Biro, D., Humle, T., Inoue-Nakamura, N., Tonooka, R., and Yamakoshi, G. (2001). Emergence of culture in wild chimpanzees: education of master-apprenticeship. In T. Matsuzawa (Ed.), *Primate origins of human cognition and behavior* (pp. 557-574). Tokyo: Springer
- Molenaar, P.C.M., Huizinga, H. M., & Nesselroade, J. R. (2002). The relationship between the structure



- of inter-individual and intra-individual variability. In U. Staudinger & U. Lindenberger (Eds), ***Understanding human development*** (pp. 339-360). Dordrecht: Kluwer.
- Odling-Smee F. J., Lakland, K. N., & Feldman, M. W. (2003). ***Niche construction: The neglected process in evolution***. Princeton, N.J.: Princeton University Press.
- Poddiakov, A. N. (2001.) Counteraction as a crucial factor of learning, education and development: Opposition to help. ***FQS:Forum Qualitative Sozialforschung / Forum: Qualitative Social Research***, 2 (3). [ <http://www.qualitative-research.net/fqs/fqs-eng.htm>]
- Prigogine, I. (1978). Time, structure, and fluctuations. ***Science***, 201, No. 4358, 777-785.
- Prigogine, I. (1987). Exploring complexity. ***European Journal of Operational Research***, 30, 97-103.
- Sato, T., Yasuda, Y., & Kido, A. (2004). Historically structured sampling (HSS) model: A contribution from cultural psychology. Paper presented at the 28<sup>th</sup> International Congress of Psychology, Beijing, China, August, 12.
- Schaffer, H. R. (1998). ***Making decisions about children: psychological questions and answers***. 2nd ed, Oxford: Blackwell
- Shanahan, M.J. Valsiner, J. and Gottlieb, G. (1997) Developmental concepts across disciplines. In Tudge, J., Shanahan, M.J., Valsiner, J. (Eds.), ***Comparisons in Human Development - Understanding Time and Context*** (pp. 34-71), New York: Cambridge University Press.
- Shvyrkov, V., & Persidsky, A. (1991). The importance of being earnest in statistics. ***Quality & Quantity***, 25, 19-28.
- Smedslund, J. (1995). Psychologic: common sense and the pseudoempirical. In J. A. Smith. R. Harré, & L. van Langenhove (Eds), ***Rethinking psychology*** (pp. 196-206). London: Sage.
- Sovran, T. (1992). Between similarity and sameness. ***Journal of Pragmatics***, 18, 4, 329-344.
- Trettien, A. (1900) Creeping and walking. ***American Journal of Psychology***, 12, 1-57.
- Valsiner, J. (1986). Between groups and individuals: Psychologists' and laypersons' interpretations of correlational findings. In J. Valsiner (Ed.), ***The individual subject and scientific psychology*** (pp. 113-152). New York: Plenum.
- Valsiner, J. (2000). ***Culture and human development***. London: Sage.
- Valsiner, J. (2001a). The first six years: Culture's adventures in psychology. ***Culture & Psychology***, 7, 1, 5-48.
- Valsiner, J. (2001b). ***Comparative study of human cultural development***. Madrid: Fundacion Infancia y Aprendizaje.
- Valsiner, J. (2003). Culture and its transfer: Ways of creating general knowledge through the study of cultural particulars. In W. J. Lonner, D. L. Dinnel, S. A. Hayes, & D. N. Sattler (Eds.), ***Online Readings in Psychology and Culture*** (Unit 2, Chapter 12), (<http://www.wvu.edu/~culture>), Center for Cross-Cultural Research, Western Washington University, Bellingham, Washington USA.
- Valsiner, J. (2004). Three years later: Culture in psychology—between social positioning and producing new knowledge. ***Culture & Psychology***, 10, 1, 5-27.
- Valsiner, J., & van der Veer, R. (2000). ***The social mind: Construction of the idea***. New York: Cambridge University Press.
- Valsiner, J., Diriwächter, R., & Sauck, C. (2004). Diversity in unity: Standard questions and non-standard interpretations. In R. Bibace, J. Laird, K. Noller & J. Valsiner (Eds), ***Science and medicine in dialogue***. Stamford, Ct.: Greenwood Press.
- Van der Veer, R., & Valsiner, J. (1991). ***Understanding Vygotsky: A quest for synthesis***. Oxford: Basil Blackwell.
- Von Bertalanffy, L. (1950). The theory of open systems in physics and biology. ***Science***, 111, 23-29.
- Von Bertalanffy, L. (1955). An essay on the relativity of categories. ***Philosophy of Science***, 224, 243-263.
- Von Bertalanffy, L. (1968). ***General systems theory***. New York: Braziller.
- Vygotsky, L. S. (1994). The problem of the environment. In R. van der Veer & J. Valsiner (Eds.), ***The***

**Vygotsky reader** (pp. 338-354). Oxford: Blackwell.

Vygotsky, L. S., & Luria, A. R. (1993). ***Etudy po istorii povedenia: obezjana, primitiv, rebenok*** [Studies in the history of behavior: ape, primitive, and child]. Moscow: Pedagogika-Press.

Waddington C. H. (1956) ***Principles of Embryology***. London, Macmillan .

Waddington, C. H. (1966). ***Principles of development and differentiation***. New York: MacMillan

White, M. (1972). On what could have happened. In R. Rudner & I. Scheffler (Eds), ***Logic & art: Essays in honor of Nelson Goodman*** (pp. 310-325). Indianapolis: Bobbs-Merrill.

Yamaguchi, K. (1991). ***Event history analysis***. Newbury Park, Ca.: Sage.

Yasuda, Y. (2004). The processes of reminiscing themselves through experiences of being infertility. Unpublished Master's thesis, Ritsumeikan University (In Japanese)