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Copenhagen University
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KOGNITIONSVETENSKAPLIG FORSKNING

Cognitive Science Research

**The Morphogenesis of Intention
and
Structural Stability of Motifs**

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Abstract

The strategy, presented in this article, is based on the Agent-action-Objective (AaO) axiom. The assumption is that intention can be discovered and made evident. But this requirement can be satisfied only under the condition that a particular individual can be identified with his style of writing. This implies that the nature of writing becomes approachable. Getting a style under control presupposes the A-component of the [AaO] model, which is discussed with a focus on string rotation and the establishment of lawful relations that include intention in laws that are governing the patterning of strings. It is demonstrated that angular articulations are characterising dynamical string movements. However, independent of their textually embedded magnitudes, they cannot survive. As the result of the text production of two Swedish students, convoluted structures have come into existence, which reflect transformations on the meaning of topological invariants. Thus, spaces will be realised, which restrict string rotations. Over the given environments, it is demonstrated that uniqueness has been achieved in the comprehension of a particular task. In the formation of motifs, the morphogenesis of intention and its structural stability have provided the basis for a 3D writing style control, while the growth curves of motifs have been shown to evolve in complex landscapes.

Natural language, conceived of as a bio-kinematical system, is assumed to exhibit clock-like rhythmic behaviour (Foster & Kreitzman, 2004), which can be studied with the aid of Perspective Text Analysis (PTA). PTA is founded partly on the Agent-action-Objective (AaO) axiom partly on the theory of rotational string dynamics. Together, they constitute the basis for studying strings, bound to the A-component and "strings", bound to the O-component as well as the periodicity of text building behaviour. Since text develops evolutionary, it has been shown that the discovered AaO-mechanism operates in accordance with a pendulum. Even more important is the fact that the pendulum obeys two laws. One requires the mechanism to keep and conserve the strict dependency, which must hold within A-O-pairs. The other demands that the pendulum is always establishing the symmetry of super strings. Together, the two laws lead to an invariant coordination. The term "invariant" refers to the establishment of a "coordinate-free" (Hestenes, 1994) A-O kinematics, which has made it possible to control the interplay between the "intention" (int) and "orientation" (ort) (B. Bierschenk, 1984 p. 11). Based on the formula $\{[int (A)] a [ort (O)]\}$, systems of language-specific coordinates have been discovered, which concern the synchronisation of super strings. Since these coordinates are intrinsic, they constitute the self-evident foundation for the establishment of invariants.

During text production, the A-component is responsible for the angular articulation of intention. Since articulation is assumed to be functional, it is causing strings to rotate with their own specific displacement dynamics. At the locations where movements originate, patterns can vary greatly with respect to their formation as well as their degrees of rotation. Since the focus is on the magnitudes of rotation as a means to establish the morphogenesis and the structural stability of the A-component, changes in the integration of the magnitudes of the A-function have to be processed and made manifest in evolving spaces. The discovery of the magnitudes of intentional string dynamics, causing a discourse to vary, implies the clocking mode of the derived [AaO] units. But the articulation of intention is not always known to the articulator or made explicit by the string producer.

The aim with the present approach is to show that the magnitudes of string articulation can be produced without retreat to the concept of consciousness and its description. To be sure, this is the first step ever taken towards a longitudinal study of the laws governing the dynamics of the A-component. Hence, in approaching intention on the basis of the A-component, discontinuity in text building behaviour can be observed and made the foundation for the lawful relations, assumed to exist between intention and text production. In order to keep track of stability and loss in a prescribed path and to recover the "kinesthesis" (Gibson, 1979, p. 123) of writing, the A-function, has been shown to be an effective device for the textual embodiment of self-sensitivity.

From an experimental point of view, it means that the A-function is constitutional for the production of rotational movement patterns as well as for the development of open spaces. The theoretical significance of open spaces [$\varnothing$] relates to the determination of evolving attractions and the way in which the attractions restrict the channelling of the produced articulations. This fact may be conceived of as a rigorous basis for an unambiguous and definite test of the validity of the space hypothesis. Applying the space-concept to the study of natural language production, however, requires a successful manifestation of the "string"-hypothesis, which has been proposed by Greene (1999, pp. 141-142).

In particular, since the focus is on writing, it is a matter of realising a perspective. When a perspective has been materialised through writing, it is governing the evolution of autonomous intention spaces. Since the distinction between an [A] and the corresponding dummy [$\varnothing_A$] serves the function of forming entanglements, [$\varnothing_A$] is responsible not only for the property of attraction but also for the property of channelling a perspective. This implies

that the evolution of a structure of intention by necessity is coupled with system dynamics. String movement in the sequencing space of the A-component and perspective phase transitions are of course influenced by the writing ability of the individual text producer.

As in the experiments, underlying the present work, testing for the existence of an intention space is based on the mirror-strategy, proposed by Greene (1999, p. 278). In the context of text production, testing for the existence of an intention space presupposes a test of the space-hypothesis (Wheeler, 1998, p. 139). In a first step, the A-O-pairs are split. But the establishment of the intention space requires a second step, namely the establishment of the validity of the assumption of an autonomously working A-function. In carrying out the second step, it can be shown that entangled states are producing cyclic returns, which imply not only shifts but also meaningful changes in the dimensionality of intention.

At a first glance, it may seem as if the testing procedure would destroy the strict dependency of the [AaO] units. But rotating strings of graphemes are driving the rhythmically operating work cycles of the A-function in the direction towards the sharpest increase in acceleration. In a more abstract sense, the displacement of strings through the A-function is letting a perspective come into existence and shift or change without intervening disruptions. Thus, in the context of evolutionary language dynamics, the establishment of intention and the discovery of states of attraction presuppose the presence of a bio-kinematic mechanism, which is governing the emerging morphogenesis of intention.

Furthermore, it has become obvious that the involved mechanisms have the capacity to produce negatively curved manifolds, i.e., hyperbolic spaces. However, the magnitudes of the entangled states depend on intrinsic curvatures. It follows that hyperbolic spaces are the result of a property, which has become known as spin (Greene, 1999; B. Bierschenk, 2001; Seife, 2003). The A-function is recognising spinning as multiples of ($\frac{1}{2}$A), while photo-like graphical copying operations are generating the properties of the open spaces $[\varnothing_A]$. The $[\varnothing_A]$ are emerging in the form of integers (0, 1, 2, …). Moreover, without the influence of any external forces, the corresponding radians are producing the spin-structure of a perspective.

Conservative self-organising processes can be observed in the neighbourhood of the thermodynamic equilibrium states of super strings. However, when the developed AaO-algorithm is in its analog mode, the processing of changes is surface oriented and becomes operational through a proper accumulation of strings of graphemes. At the grapheme level, i.e., at the first level of processing "proper" means that the resulting concentration of strings into composites is producing redundancies. At this level, the precondition for strict replication is the supplementation (S) function, which forms the basis for "block-wise" matching operations. At the first level, processing results in composites, which are functionally different compared to the original string compositions. This means that the S-function integrates strings through copying. However, the function is at the second level of processing producing shadows. In previous works, the notion block has been introduced with the purpose to point out that the S-function has the capacity to conserve the inescapable regularity of unity.

It follows that the validity of the analog mode of text processing rests on the uniqueness of the participating composites, which is achieved according to the following stipulations: (1) valid concentrations of strings into open spaces are produced when all recurrent identical strings are identified. (2) Valid open spaces are established, whenever the strict dependency of an A-O-relation has been observed. At a minimum, corresponding work cycles reflect intentional displacements in a phase-locked fashion. Hence, individual super strings are bound to strands and expressible as the synchronised running of individual A- and O-strands. But, equidistant features are marking the relational order of synchronised and sequentially running strands (Bernstein, 1967). This condition has been shown to have some shortcomings. Phase-locked processing and the involved particularities, e.g. removal of any

similarity between strings and discarding homologous grapheme patterns before matching, have prevented the characterisation of intermittent phase transitions.

Due to the covalent and firm coupling of the A-O-strands, the super strings of the A-component have been assigned the variable notation alfa (α) and, correspondingly variables of the O-component have been assigned the beta (β) notation. From the thermodynamic point of view, the coupling constitutes the basis for the establishment of the kinematics of an [AaO] unit. The A-O-kinematics remains coordinated and unchanged when known or unknown order parameters are determining their evolutionary course. However, when the matching restrictions are relaxed and cyclic changes in the radians are participating in the forming of a space, exact reproduction of the identified control parameters, e.g., periods, fractions as well as shear and strain can be taken into account.

The Gradient Dynamics of the A-component

For example, when resonating (α) variables have become copies, the tracing operation of the S-mechanism has the capacity to describe shadow-like wave movements. It follows that the displacement and supplementation procedures form the basis for the autonomous calculation of the resonating magnitude of a variable. Magnitudes are decisive for the manifestation of the rotational dynamics of a variable. Since radians are expressing the functional relation between changes in a gradient and the magnitudes, which appear at the edges where a change originates, radians are responsible for the generation of the shifting shades of a perspective. These shifts must be proportional to the speed of a variable and its rotational displacement.

A mark on a "resonating string" is generating a perpendicular compound-relationship in the flow-fields of the "Functional Clause" (I. Bierschenk, 1999). This is a significant fact, which translates into a variable. The importance of producing composites of compounds in the generation of variables concerns the acceleration in the involved rotations, which is accentuating the production of mono-layered as well as multi-layered composites. To the extent that it becomes necessary that more copies become rotated and integrated, the deeper develops the shading of a gradient. Since the A-gradient develops in front of itself, the A-function is describing a forward or downward directed path. In that [$\varnothing_A$] holds conserved variables, multi-layered composites appear always in open spaces. However, when one and the same α-variable keeps its course in the articulation over several flow-fields, the repetitions are relatively few in practice. Usually, repetitions fluctuate between one and five. Through the clocking mode of the involved pendulum, it is possible to denote corresponding increases in shading, which finally carry structural significance.

Thus the complexity of a strand grows as the result of shading. Shading implies that virtual properties are characterising displaced α-variables. Variable displacement through the S-function allows for a more elastic and fluid form of indexing geometric properties. This means that geometric properties can be updated and the change in their angular articulation, while complexity can be calculated without intervening disruptions. For example, radians serve the purpose of manifesting a gradient as an expression of rotational acceleration. The shifts in shading manifest shifting accelerations, which get numerical expression in the tracing path. As the shadows become longer and longer, the number of refractions grows and a growing number of rotations become involved in the developing structure. Structural significance is addressing the fact that free parameters are "pointless in the string-approach" (Greene, 1999, p. 383). Since intermittent phase-transitions are resulting from changes in the stability of a gradient, phase-transitions lead to changes in acceleration and the identification of order parameters, which are forming the shapes of developing spaces. Finally, this implies that angular articulation and attitude change in the mathematical sense provide the context for the manifestation of a perspective.

The Spaces of the A-component

Topologically conceived, singularities are expected to emerge through individual text production. However, a meaningful topological description is attainable only through the bookkeeping procedures of PTA. Thus, in a bio-kinematic approach, it must be recognised that writing develops uniquely and that uniqueness must become part of the description of an intention space. This is a new condition, which concerns the establishment of geometric shapes as carriers of meaningful information. Since meaning is expected to be the result of a discourse on provided reading materials within an evolutionary task environment, it has been possible to sequence the meaning generating materials according to their evolutionary import. The corresponding "evolutionary grading" of the produced shapes has been achieved on the basis of previous studies (I. Bierschenk, 1997). It follows that a transition through their arrangement is manifesting the "growth curve of comprehension".

This condition implies that the single individual performs the task of reading and writing. Moreover, in binding the individual's comprehension to the produced shapes as well as to emerging state attractors, intention can be communicated on the psychological level of description. Thus, transformations on the shapes of intention have been achieved over the single individual as the token of a biological system that performs the task according to natural law (Kugler & Turvey, 1987, p. 213).

Since the single individual constitutes a unique physical context for performance, a student with style (A) and another with style (B) provide the conditions for the study of writing (Bierschenk & Bierschenk, 2003a, 2003b, 2003c, 2004a, 2004b). With the purpose to identify the individually defined spaces of intention, it is suggested that the geometric shapes of the unfolded spaces of intention are the carriers of "quality". However, time-dependent changes are participating in the evolution of quality, which requires the establishment of the "morphogenesis" (Thom, 1975, p. 145) of intention and its structural stability.

In sum, since the quality of writing is emanating from the individual, topological singularities constitute the foundation for its embodiment in the contours of a shape. The uniqueness of a particular space appears in the morphogenetic specificity of its shape. Thus, looking more closely on the complexity and the dynamics over spaces may lead to the appearance of a deeply ingrained commonalty in the shapes. Moreover, the commonalty of shapes may be shown to be the outcome of an overall symmetry of the participating spaces.

Writing Style Control

Since writing is "self-sensitivity" it means by necessity that the individual's intention is influencing his\her "reafference" (von Holst & Mittelstaedt, 1950). In the present context, this term is synonymous with the "kinesthesis of writing". Thus, to establish a connection between the kinesthesis of writing and the flow dynamics of a discourse means to establish the style that is governing the organisation of a textual surface. Therefore, the morphogenesis of a writing style must resonate proper manifestations of the involved α-variables. In writing, unique differences in the articulation of intention can be expressed in two distinct ways. One concerns the introduction of new (α) variables. The other specifies the degree to which a particular (α) variable is re-addressed during the course of writing. It is a kind of repeated "self-indication". As more and more edges become involved in such a series, they indicate that one and the same variable continues to hold the line in the articulation and that a strand is growing in its "entwining" and thus, is "fading" away deeper and deeper into the ongoing process of conceptualisation. When the outcomes of naturally occurring variations in rotation are mapped onto a three-dimensional space, the shape of the space is really crucial for a consideration of the theoretical value of the "quality" carried by the shapes of the produced graphs for (A) and (B).
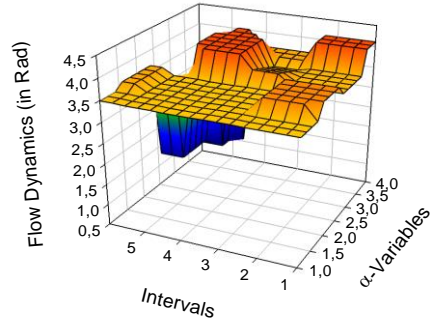
Figure 1.

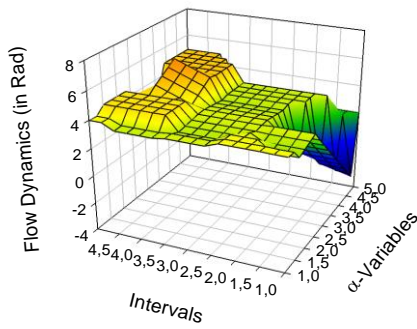*Text Producer A: The Unfolded Spaces of the Agent Component*
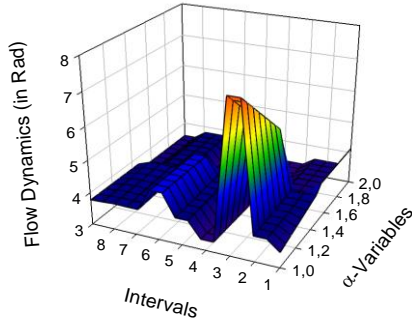
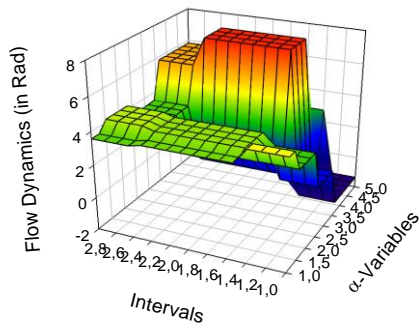A-Style
Graph 1: Gunnlaug Saga

A-Style
Graph 2: The Dwarf

A-Style
Graph 3: Candide

A-Style
Graph 4: Miss Julie

A-Style
Graph 5: Brave New World

Figure 2.

Text Producer B: The Unfolded Spaces of the Agent Component

B-Style
Graph 1: Gunnlaug Saga

B-Style
Graph 2: The Dwarf

B-Style
Graph 3: Candide

B-Style
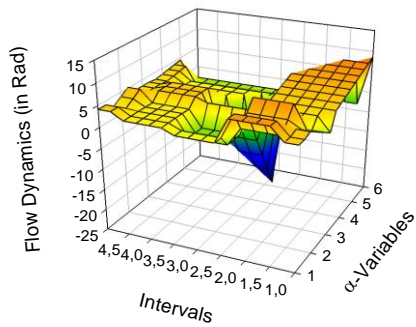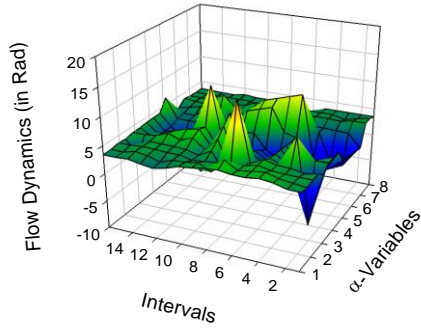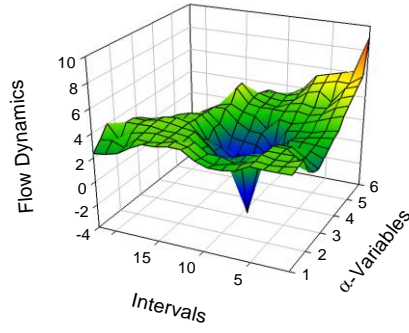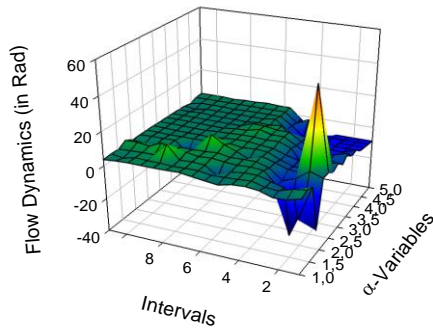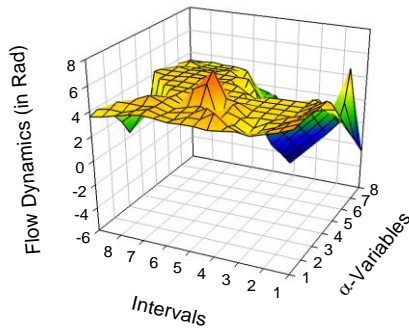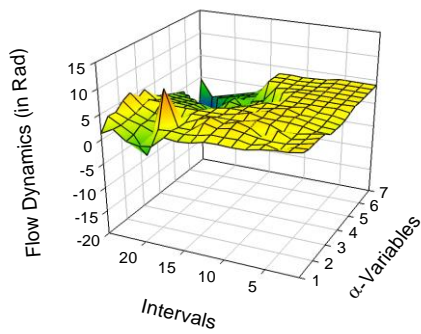Graph 4: Miss Julie

B-Style
Graph 5: Brave New World

In observing the reproduced spaces, it is easily seen that the X-axis is representing the sliding in a particular progression of α-variables, while the Y-axis relates to the periods and fractions of a period, governing the progression. Thus, as organising device, the parameter of the Y-axis plays an important role in connecting the direction of time with dynamic flows.

The extent to which a shape can give expression to the quality of a writing style has been made evident in terms of the Gaussian curvature. An interpolation of the radians has been carried out with its negative exponential function. Moreover, a local smoothing technique has been applied, which is using polynomial regression and weights, computed from the Gaussian density function (SigmaPlot 9.0, 2004). It follows that a transformed and interpolated mesh system is regularising the flow dynamics underlying writing. Since the acceleration of a particular rotational progress is expressing the functional relation between the radians and the intervals, order parameters are internally governing the expression of one's style of writing. The operations in a particular space are thereby forcing the radians to form its shape. Thus, the emerging shapes are "shapes of time" (McNamara, 1997), which make it possible to achieve a "value judgement" (Williams, 1966, p. 101), namely a judgement of quality of a writing style.

Founded on the axiomatic definition of the A-O-dependency, a very simple principle is governing the reproduction of the spaces. Both, task environment and the internal dynamics of an [AaO] system define uniquely the working of the AaO-mechanism. The reason for testing only the rotations in the A-strand with respect to its shape properties has been to get hold of the changes in the direction of a developing perspective. Hence, when the trajectories of the A-strand become allied with large radians, they give expression to higher degrees of displacement than trajectories, associated with small radians. Finally, variable movements through a particular angle might or may not be equal to the joining radians.

The larger the distance to be covered by a rotating variable the greater is the rate of fading. Shifts of shading around some preferred phase relations have been determined in order to demonstrate the kind of change that can be observed with respect to the order constraints that are temporarily trapped by the "shadows" of preceding attractions. For example, the effects of a change from one variable state into another are determining how this transition is governing acceleration.

For example, the large dynamical increase in the flow of the first graph of (A) is the expression of a critical speed as well as the time needed to slow down in order for the flow to relax to the speed level of the initial phase. Thus, observed instabilities are the result of critical changes in the moulding. The transformational step from variable movement to the representation of a style of writing can be identified with the borderline, where the physical basis of the terminal variables transforms into virtual states. Thereby, new system constraints are produced, which pass beyond the limit of reality. Thus, the entwining of the A-strand implies the development of a helix, which constitutes the apparent demonstration of dynamical rotations.

Furthermore, in communicating rotational differences as well as differences in timing in the production of a variable, it is important to understand growth as increasing morphological complexity, while the complexity in a configuration of variables represents the adaptation to a particular task environment. Hence, the comparison of the graphs allows also for a study of growth in comprehension. In discussing the impact of the order parameters on the adaptation of a writing style to a particular task environment, it can be concluded that the general fitness of a shape cannot be imposed a priori, but only discovered through PTA. It follows that the complexity in a manifested shape concerns a time-dependent moulding of the flow dynamics of intention. At steeps where the magnitudes of a formed configuration of

variables are changing spontaneously and without any noted ordering influence from the outside, the effects of inherent order parameters become evident.

The shape of the first graph of (A) can be compared transitionally, which makes it obvious that a particular kind of "backpacking" is forcing the flow in a certain direction. Hence, the steep refers to an exceptional rise of "grapheme packing". However, there are also graphs where the rotational transformations have produced certain degrees of implicitness. In this sense, shadowing below sea level is validating novel ways of changing the integration of variable movements into properly formed trajectories.

Through the establishment of what has changed in a particular space, it has been possible to follow the path of a single graph and to show that a particular graph depends on how much elastic energy has been expended in the formation of its path. With respect to the flow dynamics, it can be concluded that the trajectories of (A) develop mainly near or above the zero-line of a graph. Therefore, the overall impression is that the flows depend on the packing of strings of graphemes.

By comparing the graphs of (A), it becomes evident that the clocking mode of each and every text has its own specific pendular movements. Specificity in movement is producing the geometric properties, which are expressing the characteristic quality of each single text. Common to all is that the magnitudes of the involved variables have produced block-like morphologies, which means that the movement patterns have rotated quite linearly and produced shapes with very similar contours.

Within the task environments, the evolution of a particular kind of shapes must be conceived of as the development of a certain style of approaching the task. Just like the first graph of (A) marks rigidly stacked string patterns, all others appear to reflect the same kind of packing. It follows that the evolutionary development of a particular style of writing requires that the variations in a space reflect a unique contour. In sum, the produced discourses of (A) have made it possible to demonstrate that their shapes reflect a certain "elastic stiffness", which is manifesting the effects of energy investment through the patterning of strings at the kinetic level. Moreover, since the overall similarity of the shapes appears as fairly stiff the shapes communicate a quite shallow perspective.

Since it has been shown that the adaptation of a writing style to a particular task environment depends on the clocking mode, maintenance of a particular clocking reflects not only internal system dynamics but also the structure of its task environment. Thus, the study of growth makes it important to relate a shape to its particular task environment. Thereby, growth can be identified with differences in adaptation, which means that the identified individual differences in sensitivity to the affordances, embedded in the task environments, have consequences for variations in progress.

Since pronounced variations within and between the graphs of (B) are observable, this condition allows the conclusion that growth has to be conceived of as effectiveness in adaptation. This conclusion is grounded in the graphs of (B), which are the outcome of a more fluid way of writing. Accounting for higher degrees of flow implies accounting for elasticity in the integration of diverse rhythmic (i.e., temporal) and periodic (i.e., spatial) patterns of strings. Hence, the produced shapes point towards flexibility and illustrate that the clocking mode is highly sensitive to contextual differences. With respect to the individual differences between (A) and (B), it can be concluded that the graphs of (B) are the outcome of a diametrically different style of writing. The difference in style is evidently the result of a particular softness in moulding, which has required a higher degree of "depth" in the relational processing of the movement patterns.

In contrasting the produced discourses the trajectories of (B) have resulted in "elastic softness" and marked differences in the contours of the produced shapes. With reference to the writing style of (B), it has been shown that the functional relation between writing a

perspective into text and the meaning-generating task environment has given rise to a more pronounced complexity and a higher degree of adaptation. As the product of changing attitudes, these circumstances can be read out from the dimensionality of the graphs. Dimensionality is the expression of one's degree of sensibility in the comprehension of task specificity. This means that the context-embedded structures have produced higher degrees of dimensionality and complexity in the flow dynamics.

Thus, in building a link between PTA and the bio-kinematic description of a writing style, it is essential to connect the helical property of a strand with the flow dynamics of the [AaO] systems. The working of the [AaO] systems is absolute in the sense that the developed bookkeeping procedures can never make any mistake in the identification of a style. Simply expressed, the axiomatic basis of an [AaO] unit implies that the mechanism cannot miss its target, namely the manifestation of adaptive-ness. Hence, errorless working with respect to a processed target condition is the applied definition of preciseness in the identification of the trajectories of intention, which results in a perfect "3D writing style control". Finally, when the "quality" of a style is captured in strictly technical terms and in its most fundamental delineation, quality refers to completeness in processing as well as to the exactness in bookkeeping. In particular, the bookkeeping capacity of the mechanism is manifesting itself through a seamless integration of the internal states of an [AaO] system with its task environment.

The Growth Curves of Motifs

The scale for the establishment of a "growth curve" of motifs has been made dependent on the comprehension of achieved transformations of thought at the edge of literature and science (I. Bierschenk, 1997, pp. 16-17). Since the evolution of a developing text has been presented as a bio-kinematic system, it demands a focus on emerging motifs.

The fitness landscapes of (A and B) are resulting from uniqueness in the process of comprehending the motifs of a particular work of literature. With reference to the fitness landscapes of (A), it can be concluded that the first graph gives expression of the reader's searching for sensation and for identity. Since the graph is reflecting an attunement to the simplicity or crudity of a saga, it implies a rather naïve or primitive approach. When this approach path has passed through the state of being sensitive to fate, a transformation is taking place, which provides the context for the comprehension of "myth". Its essential ingredient relates ostensibly to literature that builds on historic events and particularly those of cultural import.

In entering the transitional state of mastering ideas, the resulting stage of comprehension concerns the ideas of empiricism and rationalism. But when symbols are emerging for the expression of naturalism, comprehension is expected to have reached the stage, where the "Zeitgeist" reigns. After having passed through this stage, comprehension should be focused on "character" as the constitutional expression of individualism.

Concerning the evolution of a growth curve, the extraction of shifting direction must begin with taking advantage of all subtle changes in the folding of the produced values. Through the manifestation of what has changed through a particular folding operation, it becomes possible to establish depth through value integrations and to show that fitness depends on how motifs are remoulded in order to become adapted to a particular outlook. Thus, extracting the shifting directions of kinematic trajectories is effectively contributing to the refinement of a characteristic structure of motifs.

In general, the transformations on the topological invariants of a motif structure are resulting from a step-wise recalculation, which has the capacity to track shifts in the folding and to rebound the course of the developing path with exactness and precision.
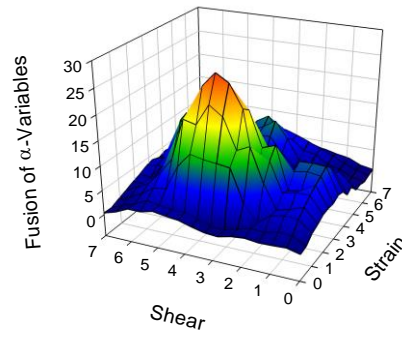
Figure 3.

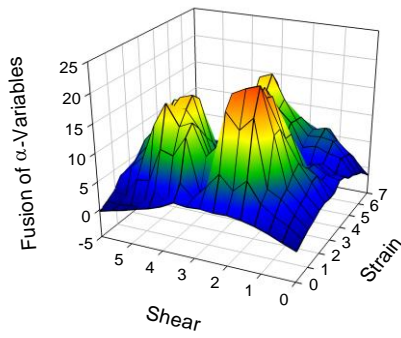*Text Producer A: The Folded Spaces of the Agent Component*
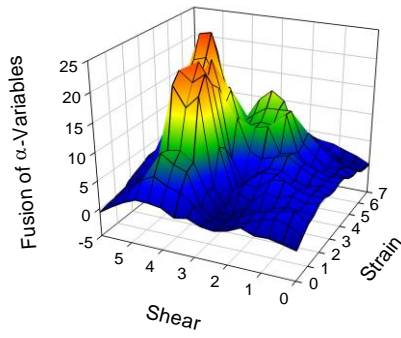
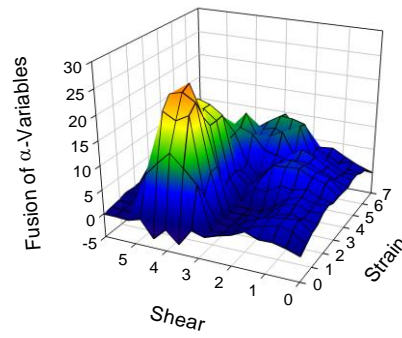A-Style
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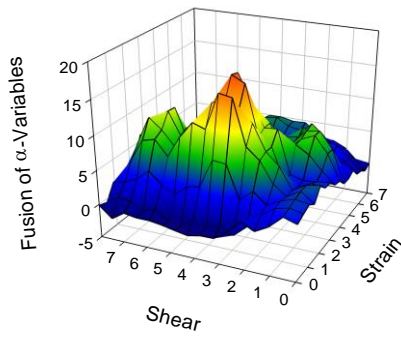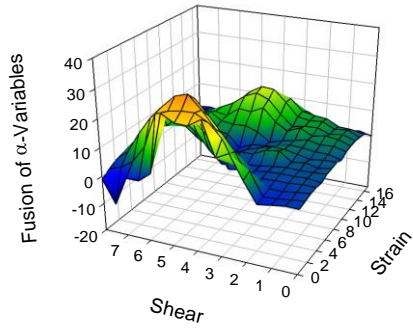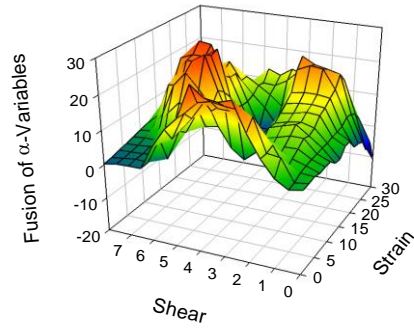
A-Style
Graph 5: Brave New World

Figure 4.

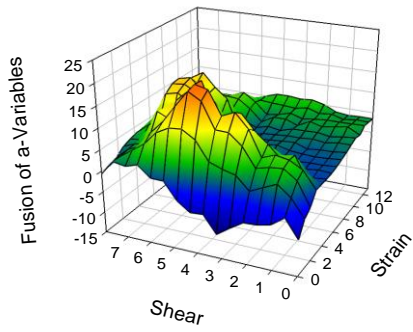*Text Producer B: The Folded Spaces of the Agent Component*
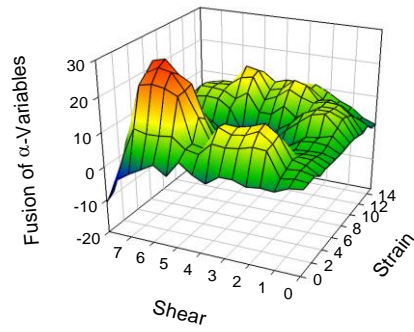

B-Style
Graph 1: Gunnlaug Saga
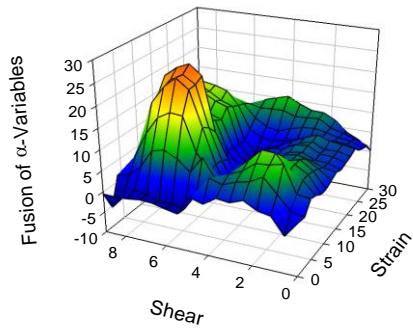
B-Style
Graph 2: The Dwarf

B-Style
Graph 3: Candide

B-Style
Graph 4: Miss Julie

B-Style
Graph 5: Brave New World

In the present context, the search for motifs is tied to the fusion dynamics of the graphs and has to be conceived of as the operational definition of the asymmetric extraction of a perspective. Fundamental to this process is the provision that growth can be taken into account and evaluated in relation to the complexity of the emerging fitness landscapes. However, relative to some line of reference, the significance in the inclination of a path is increasing with time. Thus, a stepwise transformation is simultaneously generating a path that is climbing a specific peak.

A first measure of the difficulties posed for comprehending the property of a task environment is the degree to which a dimensional transformation of the conceived depth-relations has taken place. Since the folds of a landscape are expressing evolving substructures, manifested substructures give expression to the evolutionary "fitness" of a particular configuration of motifs. A singularity of an established configuration is characterising the region of a landscape that is manifesting a particular change in perspective. Therefore, the singularities of a landscape are marking differences in perspectivation. Moreover, strong bottlenecks imply firmness in the path of a perspective. As a result, all the complexity observed at the end of perspective transformations can be circumscribed and communicated with the terminus of the final singularity.

Concerning the landscapes of (A), the final singularity of the first graph has appeared in the locality, described by the third shear dimension and the fourth strain dimension, i.e. (shear-3, strain-4). This notation will be used for the location of a named singularity. Once the trajectories of the participating microstructures have moved the fusion process in the realm of the global state attractor, only trajectories are beneficial which move a spiralling path towards its final singularity, which usually is localised at the highest peak of a mountain massif. The peak of the first graph is carrying "Blood Vengeance" as specifying terminus of the entire configuration. Thus, when the total configuration has settled, only one single terminus is necessary to determine and communicate the distinctness of the emerging global invariant. It follows that the terminus of a global state signifies the character of the entire transformation process. A globally determined motif concerns the transformations performed on topological invariants. Obviously, the distinctness of the first landscape seems to be founded on "destructive plight".

The second landscape is the result of a formation that is not very different from the first. Since the singularity in the location (shear-4, strain-5) implies a focus on the "Humiliation" of human life, the path is once again settling on the actuality of destructive behaviour. Therefore, it follows that both landscapes are a function of supposed force and harshness, which support the apprehension of forced destructive actions.

In the third landscape appears a slightly more differentiated configuration of mountains. The final singularity is settling in the location (shear-4, strain-5). Emerging is another kind of destructiveness, namely the "Infliction of Loss", which essentially is physical and characterising the apprehension of the behaviour of a looser.

In the fourth landscape appears the final singularity in the location (shear-3, strain-6) and its terminus gives expression to "Confinement". Hence, the spiralling trajectory circles around a further kind of destructiveness, namely the harnessing of individual autonomy, which appears as a function of a rigid system as well as insufficient freedom and consequently responsibility.

Finally, the somewhat more complex mountain formation of the last graph is a little more rounded, but carries essentially the same basic properties of the preceding mountains. At the location (shear-5, strain-5) appears the final singularity, which is concentrating on the destruction of the individual's "Dignity", however now in the context of a societal system that is inflicting not only physical, but also mental deficiencies.

In turning to the landscapes of (B), the graphs make immediately apparent that a most dramatic change can be related to their growth in dimensionality as well as in complexity. The observed dynamical changes in the folds of the developing mountains and valleys are strictly bound to corresponding informational changes. This, in its turn implies that a differently developing growth curve comes into existence.

For example, the path in the first landscape is settling at the location (shear-4, strain-16), where the terminus "Changeableness" suggests that alternative strategies of action have been conceived. Hence, the contour differences of the first shape open a new way of encompassing the meaning of a growth curve, which is initiated with an implied possibility of flexibility in behaviour. But changeableness may also mean the conceived possibility of "inner"-control as a realistic alternative to "outer" control.

In having concentrated on behavioural control, the global state attractor of the second landscape appears at the location (shear-5, strain-28) and brings out screwed sensationalism and the comprehension of incompleteness in personal growth. Therefore, the terminus of this singularity concerns not only missing self-identity, which marks the absence of self-determination, but also the missing condition of exercising control over one's own development of worth.

In the third landscape appears the final state attractor in the location (shear-6, strain-11). The corresponding terminus is "Improvement of Discrimination ", which offers itself as intellectual improvement. In conclusion, this terminus is pronouncing a necessity for sharpness and clarity in apprehending the shades of life. Furthermore, improvement means a successive approximation to reality, which is specified by a "controlled learning task", namely to become responsible for determining one's own life.

Through a higher degree in the complexity, the fourth landscape is the product of changes, which are concentrating on the individual's survival capacity. The realised path of a discourse on the ideational context of the task environment is ending in the location (shear-5, strain-13). The terminus of the final singularity is establishing "Hereditary Dominance" as the name of the global state attractor. Thus, the developed path implies the comprehension of adaptive effectiveness. Behaviourally, the terminus relates the individual's ability to control others.

When control finally transforms into the purposeful design of human life, human dignity comes into sight. Through the last transformation step, a landscape is developing, which implies that the production of a de-humanised society has been conceived. This result includes the awareness of the obvious fact that the import of human dignity has escaped the attention of the designers of the described society. "Violent Gangs" is the terminus of the global state attractor, which appears at the location (shear-6, strain-27). The terminus implies a loss of human values. In essence, the terminus is clearly marking lost meaning in the struggle for life. Hence, the implied premise of the growth curve is without doubt "conscience". In conclusion, an overall symmetry has emerged over the changing landscapes, which gives evidence to the conceived importance of self-determination.

Discussion

In retrospect, it can be stated that the invariance of the established global state attractors has emerged through an evolutionary search for motifs in complex landscapes. This search has been based on the assumption (1) that adaptation needs to be recognised at the individual level and (2) that natural law together with selected materials furnish a complex explanation for the deeply ingrained commonalty of the developing growth curves. Thus, reading literary texts plays an obvious role for individual adaptation in the comprehension of

some thoughts and courses of events in the history of ideas. The basic structure of the selected materials suggests a cumulative progress, e.g., increasing morphological complexity in a resulting discourse or in other words, an increased effectiveness in the adaptation to the tasks of reading.

As a product of the maintenance of adaptation, evolution has emerged as search for a general trend over complex landscapes. In becoming familiar with the adaptive changes in the emerging folding, the importance of differences in the folds of the landscapes has made relative fitness approachable. But it has become equally evident that fitness cannot be measured on the basis of evolutionary success. In order to be able to discuss adaptation and general fitness, it has been necessary to show differences in the individual reader's adaptive adjustments. As a result of the demonstrated individual difference, it can be concluded that success can be measured only on the individual basis of adaptive behaviour. Against the given background, it can be argued with Williams (1966, p. 215) "that schooling behaviour (the individual activity), is adaptive, but that a school (the statistical consequence) is not."

Finally, when evolutionary trends constitute the context for resemblance, the structural relations, underlying a landscape, appear to be dissimilar partly in the dynamics, partly in the forming of novel state attractors. But the most characteristic property of an emerging growth curve is that it is loosing its direct similitude due to the higher degree of abstractness and that it is shifting toward a phase where the boundaries of the curve are defined anew. Still, the global state attractors can be regarded similar, since the underlying stability in change pertains to the established structural resemblance of a particular text producer. Naming the global state attractors means naming the deep structural relations at work. In conclusion, the comprehension of the novels has produced the super-symmetries of the intention, which have formed the basis for the emergent growth curve.

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