

A System Dynamics Model of Individual Patterns and Strategies for Labor Market Reintegration

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Abstract

In modern societies the labor market integration of each individual demands the central task of integration. Nevertheless “job integration” or a successful occupational life course depends not only upon his or her motivation or attention to the job directly, but is also a function of his or her qualification or biography and of his or her embedding into a preferred social environment. Using a system dynamics model introduced in this paper we demonstrate that an individual re-balancing between his or her job, biography, and social embedding is necessary to guarantee an optimal and sustainable labor market reintegration.

Keywords: modernity, unemployment, social environment, biography, attention, work-life balance

1. Introduction

With reference to the explanation and regulation of important economic or socio-political developments, unemployment and its consequences have continuously been significant parameters for system dynamics models (see, e.g., Forrester 1989). This is hardly astonishing: Unemployment constitutes a central as well as a complex phenomenon of modern societies. Economic, political and above all social and biographical problems are interpenetrating one another. The finding of an optimal solution presents itself as a highly complex task. However political administrations often resort to short-term measures.

The macroeconomic or even the social impacts of such political measures are, if at all possible, very difficult to verify empirically since the impacts of different factors are difficult to tell apart. In order to evade this dilemma, we will instead focus our contribution in the following on the individual patterns and strategies, which pursue the objective of overcoming unemployment as a result of the alteration of the subjective strategies of action.

Our approach seeks to demonstrate that the application of system dynamics models on an individual level is capable of improving quite considerably the chances of a labor market policy both in an economic and in a social respect. A further, in our opinion, downright stringent advantage, consists in the far greater extent of transparency that system dynamics models demonstrate in comparison with ideologically or hermeneutically inspired discourse and decision making processes.

For this purpose our system dynamics model takes three central influencing parameters for returning to one’s job into consideration: job integration, biographical disposition involved and the subjective embedding in the social environment. Disclosing this constellation and their process dynamics we intend to expound:

- that individual patterns and strategies for job integration exist, which may be described by means of our system dynamics model, and
- that for some an increase of personal efforts for reintegration does not always lead to the desired results. Quite on the contrary it sometimes may even be counterproductive. That is due to the fact that other factors – achievement of biographical objectives and preservation of the social embedding - may be of greater personal significance.

In the following some relevant background (section 2.) as well as the basic concepts of the present contribution (section 3.) are being introduced. In section 4. we shall then present the system dynamics model, whereby we will at first expound the interdependency between the factors mentioned above – job integration, biography and social environment – by means of a causal loop diagram. Based upon this, a

stock and flow model can then be built facilitating a parameterized simulation calculation. Different patterns of job integration and the possibly different strategies for reintegration conditioned thereby are finally simulated and commented on by means of constructed and empirical verified occurrences. A discussion concludes this contribution.

2. Background

This paper considers the labor market and sociopolitical situation in Germany. The instruments for the fighting of unemployment feature a compromise which is exemplary for the developed economies. This compromise concerns balances between the economic objectives of the enterprises, the material and social needs of the economically active population and the demands made on the modern socio-political solidarity. In addition these instruments represent an effective cross-linking between labor market policy and social policy. And last but not least these instruments comprise a certain constructive respect for the conditions of the modern life organization and thus consequentially also for the question, how cultural, social and economically adequate participation might be guaranteed to all citizens. Also in a rather negative respect, the German model is to be denoted as exemplary, for it transposes the responsibility for the unemployment again in the direction of the individual.

In Germany the »Fourth Law Concerning Modern Services on the Labor Market « (Hartz IV) is valid since the beginning of 2005. As a basic principle it stipulates a combination of “fostering and making demands” based upon which the unemployed persons feel impelled to take any measures to end or diminish their need for help” (Deutscher Bundestag 2003, Art. 1, § 2). In particular the requirements have been aggravated in such a way that also such jobs have to be accepted which exhibit worse working conditions and forms of remuneration than the former ones or in which the original professional competences and functional qualifications of the unemployed persons do not receive the attention they deserve (see Deutscher Bundestag 2003, Art. 1, § 10). Thereby the biographically accumulated social achievement through employment is challenged extensively. That is an interference in the life organization of a person or of a primary system which affects their self-organization. By sanctions (see Deutscher Bundestag 2003, Art. 1, §§ 30-32) the unemployed persons are meant to be made to attune in a respectively flexible and self-activating manner to the new situation (see, e.g., Peschke 2006).

With regard to the individual sociological levels, which are relevant in our contribution we will take four different levels into consideration: modernity, policy of labor market in Germany, the complicated interspheres of modern structures of work-life balance and the dynamics of subjective actions concerning their economic, social and biographical consequences.

3. Formal Requirements of Modern Life Style and its Balance

Modern lifestyles are conditioned by a multitude of factors. This is what makes its balancing so complicated. Furthermore, the actors in everyday-life do not have adequate information, competences and capitalizable resources available, in order to guarantee their intention of quality of life in the handling and balancing of real life-styles successfully and sustainably. Therefore – beyond already such tremendous retracements, as the occurrence of unemployment constitutes as a rule for the subjects – labilizations of the daily basic principles of the life-style occur again and again as well. Everything is constantly in motion. Everything has to be re-linked again and again. These labilizations are time and time again evoked by the dynamics in the social environment – in particular on the condition of primary systems as well as above all by the constant innovations and rationalizations. They are posing new challenges to the individual integration into the labor market and her professional-functional competence requirements as well. Thus, for the need of gainful balance and quality of life we have not only to be aware of changes forced by technical and economic dynamics, but also forced by the modern life style and the social dynamics caused by modernity and correspondent "feelings" of the individuals.

The processes of labilization described above contain different semantics and they are structured by basic contradictions. The most important ones shall be outlined briefly here.

3.1 Semantics of Modernity

The Semantics of Modernity comprise two conflictive orientation codes, guiding the integration into the society. On the one hand, the code of the technical, political and bureaucratic rationalization imposing the regime of professionability and participation in the labor market upon man: „humanity of professionals” (Weber 1964). On the other hand, the code of individualization and self-portrayal, which enables subjects to realize cultural, moral, aesthetic and social freedom to an increasing extent. The coercion of participation in the system of gainful employment is thus confronted with more and more manifold chances, to achieve their own biographical aims in life (see van der Loo 1992). Even if the regime of the gainful employment exerts multiple constraints with respect to the self-expression of lifestyle – this is in particular the case in Germany, where the social security systems are leaning very closely towards the regime of gainful employment – thus it does yet have the advantage, that via income and career opportunities, positive effects are setting in for the reproduction and the improvement of the individual living conditions. “Job Integration” has to signify inasmuch a central objective of any individual, in order to ensure his/her existential conditions and to maintain manifold chances of participation. The crux is now, however, that the semantics of freedom and self-determination, which are just as multifaceted, exert a suggestive influence upon the individual lifestyle. And these lifestyles should be settled also beyond gainful employment. The dramaturgy of this contradiction can be demonstrated further below by the example of the work-life-balance-model.

For the analytical reconstruction of the questions, why unemployment intervenes thus profoundly in the hitherto practiced balance and why the individuals want to/ have to come into employment again as rapidly as possible and without irreversible outflows, these pre-normatives of the general basics of modernization are inasmuch central. They are quasi as a subliminal provider of the target involved in the respectively subjective strategies. The basic model of the work-life-balance is thus to a certain degree identical with the basic model of the return to the “job integration”. Even in the respective sectors, which are irritated and have to be dynamized adequately.

3.2 Contradictions of Modern Life and its Organization - An Overlook of Micro-Problems and Micro-Demands

As we have demonstrated, the contradictions of the modern life organization follow in the fundamental sense the basic contradiction of the Modernity between constraint and freedom. On the socio-economic micro-level of modern societies, this leads to widely ramified opposite constellations focusing in particular around the three poles:

- the biography and its intention of action
- the profession or the job, respectively – which are in the majority of the cases no congruent factors
- the social environment or the referent „primary system“, respectively, which is relevant to the individual subject

The objective- and action problems of the modern actor consequently consist in that he/she has to re-coordinate all over again the components of his/her life style drifting apart from his/her own development logics to an increasing extent. In this context he/she has to make decisions with respect to the emphasizing and preferences (see Colemann 1976; Giddens 1991). Precisely in the balancing act between the short-term necessity of gainful employment and the medium- up to long-term personal developmental objective, there is the danger of an „hyperbiographization“, but as well the one of an „subbiographization“ (see Vetter 1992).

The modern life organization of the individual does therefore not only constantly extort in reality compromises from the individual, it also implies a preventive, self-reflexive learning program (see Vetter 2009), favoring the one, who is capable of aligning on the one hand his/her aims in life with the objectives of gainful employment and on the other hand with his/her embedding in the social environment as realistically as possible. Ultimately, the individual biographical disposition of self-fulfillment and successful external referentiality has to be maintained on a medium level.

3.3 An Extended Concept of Work-Life-Balance

The result of our considerations is implied in an extended model of the “work-life-balance”. It is extended here above all by the factor “biography”. This means that we have reason to assume on the basis of our empirical results that the person does not only search for a reliable balance between both objective factors (work and social life), but that it also involves the individual personality and seeks to establish at least inner

contentedness here. By this search for contentedness another sub-factor is implied simultaneously: Provision of continuity in the further history of life between the biographical objectives and the present circumstances of life (see Vetter 2007). Quality of life is consequently a function of three (or four, respectively) factors and not only of two factors. This alters the model decisively. It is above all getting reality-competent to a more considerable extent by the embedding of the genuinely biographical options.

If we continue now to dynamize the model and try to define it with the help of the theory of the attention economy, it then shows that the charging of a factor results quasi automatically in the burdening of – that is to say: in the stagnation and further: in temporarily conditioned outflows – among the other factors. What is more: a sustainable contingency conflict arises. This additional conflict results from the entire dramaturgy, unemployment provokes. Unemployment does precisely not only represent an actual loss of job and income, but it poisons as an all in all deficitary biographical and social structure of action the previous lifestyle itself (see Wacker 1976). The superior attention for the reintegration into the job, which is often imposed upon externally by the employment office, thus destroys by this means not only individual pillars, which have guaranteed the former balance, but it aims in a negative way at the fundament of this balance itself. If the habitualized attention, which a subject dedicates on normal conditions to the balancing of all factors of his/her life situation, is disintegrated unilaterally in favor of the restoration of one of the involved factors – in this case thus the “job integration”, according to our model, a far-reaching existential crash can then be predicted (compare section 4.). This does not only impair the chances of integration and the personality of the unemployed persons themselves, but it also leads the employment centers into large-scale failures, which (may) jeopardize their legitimization, as well, however, the ones of the superordinate economic system itself to a considerable extent.

A specific “setting of attention” always functions as an initial quantity for the practicing of the WLB-model. This always guides the distribution of the attention, which is for the individual case always authentic, as well as the reaction patterns to alteration in the profession and every-day-life. The objective is to maintain the originally constructed “setting of attention” to a far-reaching extent toward the practice of profession and social everyday-life. That means also with respect to the alternating conditions of the primary system, one’s own circumstance of life and the individual aims in life. If “unemployment” sets then in, an attempt at the restoration of “job integration” is started precisely by this “set”, which has been practiced by it at last – i.e. before the occurrence of the unemployment. This now means a crucial alternation for the assumption, on which options for actions and measures, the process of reintegration into a job is factually based or has to be based scientifically. Since from the point of view of the acting subjects, it is always necessary to retrieve the previous balance structure in the remaining areas of life (biography, social environment) in addition to the recovery of the “job integration”. It therefore concerns a holistic, integrated attempt at defending and restoring the individual authenticity of the lifestyle. Considered from the aspect of the identity of the individual unemployed person, a holistically motivated dynamization of the reintegration process has to take place and not only a punctiform dynamization of single factors. At the same time it has to be ensured that the structuring of the awareness economy and the objectives taken as a basis for the reintegration process, have to be effected by no means by abandoning the objectives of the unemployed person himself/ herself.

4. System Dynamics Modeling

In the following we will at first attempt to cover the complex interactions between job integration, individual biography, and social embedding (primary systems, colleagues, friends, family) by means of a causal loop diagram in section 4.1. Based upon this, a corresponding model is built in section 4.2 which facilitates a quantitative calculation of qualitative processes. Finally, section 4.3 presents some patterns and strategies of labor market reintegration using system dynamics simulations.

4.1 The Causal Loop Diagram

As described in chapter 3. the focus of our modeling is to consider the state variable “job integration” not in an isolated manner, but in interaction with both other state variables “individual biography” and “embedding in the social environment”. Two reinforcement loops in our model in Fig. 1 represent these mutually fortifying implications between the “job integration” and the “biography” (R1) on the one hand and the embedding in the “social environment” (R3) on the other hand.

Simultaneously it is to be assumed that the attention of a person with regard to any of these three state variables constitutes a balancing loop (B1 - B3) with the respective, directly relevant state variable.

Since the attention on the whole which a person is capable to pay is limited (see, e.g., Davenport 2000) the increase of the attention to “job integration” does not remain without impact on the attention on both other state variables. According to our model an increasing attention to the “job integration” results in a reduction of the attention to “biography” and “embedding in the social environment”. This means: a reduction of both of these state variables occurs as a consequence of the modified balance of attention. Two further reinforcement loops (R2) and (R4) originate from this constellation.

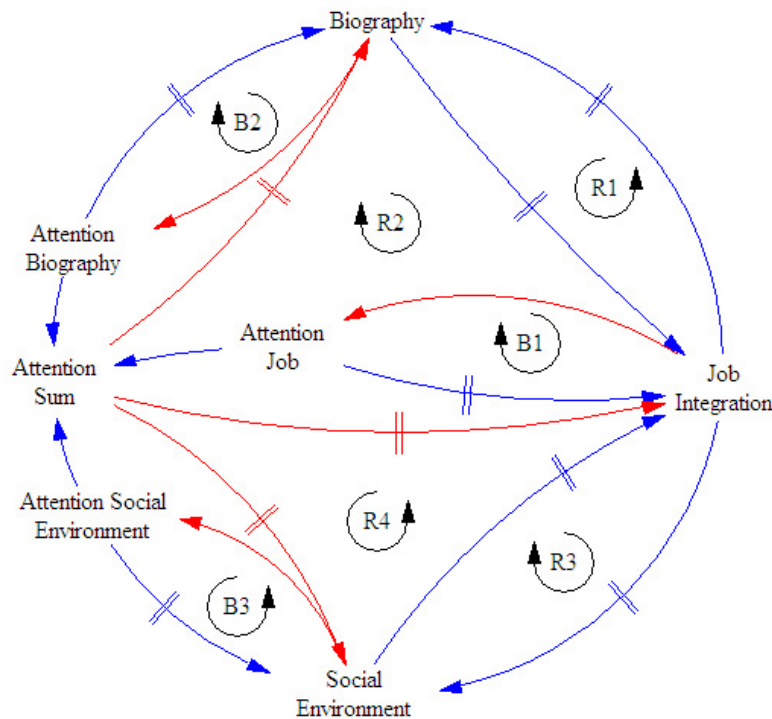


Fig. 1: The causal loop diagram

As benefitting as the reinforcement loops (R1) and (R3) undoubtedly are for the increase of the “job integration” as well as for the biography and the embedding in the social environment, at the same time they are even more problematic if the job integration fails. From this point of view the unemployment aid organized and financed by the welfare state makes sense not only for humanitarian reasons, but it is also necessary as a factor stabilizing, i.e. interrupting the reinforcement loops (R1) and (R3). Unemployment should not result in social isolation or biographical hopelessness which both in turn make a labor market reintegration impossible.

Other than (R1) and (R3) the entire effect of the causal loops (R2) and (R4) or (B1), (B2) and (B3) raised by the shifting of the attention depends upon the individual situation and the subjectively selected reintegration strategy. A closer contemplation of this process structure shall take place in the next section.

4.2 The Stock and Flow Model

On the basis of the causal loop diagram introduced in section 4.1 a stock and flow model can be configured which facilitates a consideration that is quantitative, i.e. specific to a concrete situation.

As depicted in fig. 2 this model comprises various parameters which can be utilized for the reproduction of the initial conditions (green), the personal attitudes and reactions (purple), the external influences (yellow) as well as the model internal coherences.

The three stocks visible in the diagram represent the three known state variables “job integration”, “biography” and “social environment”. These dimensionless quantities each exhibit the values of “1.0” if the respective state is classified subjectively as overall satisfactory.

In a case like this the individual sees no cause to shift his or her distribution of attention so that the parameters “attention job”, “attention biography” and “attention social environment” each adopt the basic values “Basis AJ”, “Basis AB” and “Basis AS”. If the value of a state variable of 1.0 deviates, the individual counteracts by shifting his or her attention. How strong his or her countermeasures are, is determined by the “Reactive AJ”, “Reactive AB” and “Reactive AS”. Other persons or organizations can additionally influence the attention in the same way by changing the control values “Ext AJ”, “Ext AB” or “Ext AS”. The standardization by “Attention Sum”, however, provides for the overall effect on the factor attentions to constantly remain at 1.0.

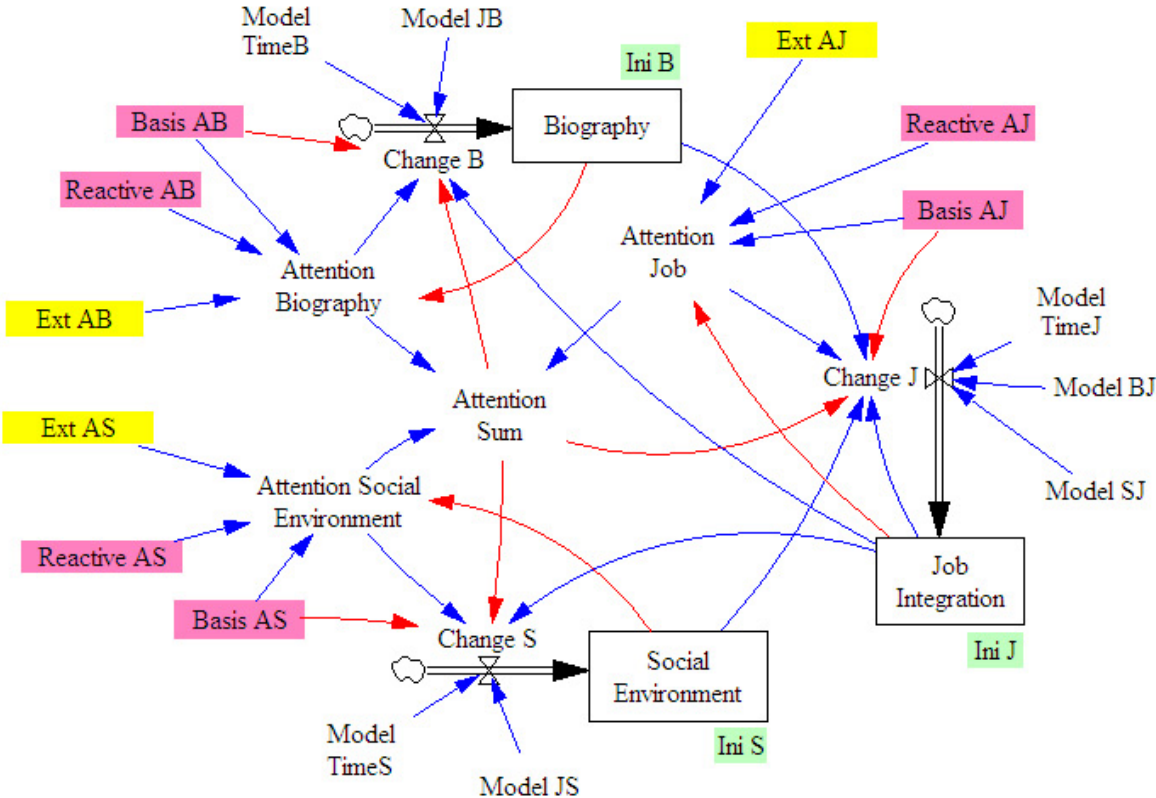


Fig. 2: The stock and flow diagram

According to this model, not only the factor attention determines the alterations “Change J”, “Change B” and “Change S” with respect to the state variables. “Job Integration” can contribute to “Biography” and to the embedding in the “Social Environment” through the factors “Model JB” and “Model JS”. These in turn contribute via the factors “Model BJ” and “Model SJ” to “Job Integration”. The outflows or negative inflows are determined by the time constants “Model TimeJ”, “Model TimeB” and “Model TimeS” which are defined as how many months the respective state variables might require without any further inflow before they drop to “0”. For our simulations presented in this paper the values 12, 24 and 60 are defined for these variables.

Finally the model utilizes the initial values “Ini J”, “Ini B” and “Ini S” of the respective state variables in order to represent a certain problem situation.

4.3 Scenarios

Based upon the stock and flow model introduced in the previous paragraph, various patterns and strategies of the labor-market-reintegration can be simulated. In this paper we will focus on some ideal typically

constructed cases. In these cases the individual under consideration has been in a state of equilibrium before the occurrence of unemployment which constitutes an exclusively exogenously induced event. The value of “job integration” at the point of time 0, “Ini J”, is fixed at 0.5. To be considered is the development of the state variables within the subsequent period of time of 24 months.

Fig 3 demonstrates the first constructed case. The basic attention for “biography” in this case is weakly marked. Without any external influence reintegration does hardly ever take place (Job 1). If one evokes the person's attention to the “job Integration” its value increases only slightly (Job 1a). However, if one directs his or her attention to the biographical development a considerably better result can be achieved, as shown in the simulation (Job 1b).

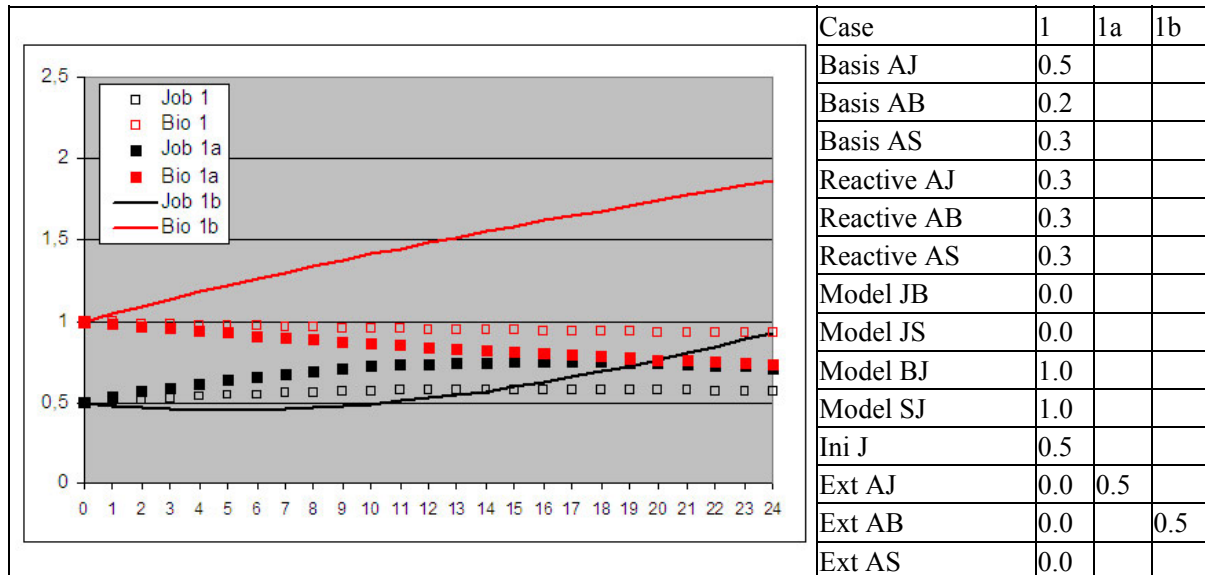


Fig. 3: Case 1 - Better reintegration through more attention to biography

Fig 4 illustrates another situation in which the individual can be denoted as “workaholic”. If in this case a discontinuity in the “job integration” arises as a consequence of unemployment additional attention to “job integration” enforced by external pressure even has a counterproductive effect (comparison between Job 2 and Job 2a). In this case focusing on the embedding in the “social environment” demonstrates to be the right path while simultaneously reducing the attention to “job integration” (Job 2b).

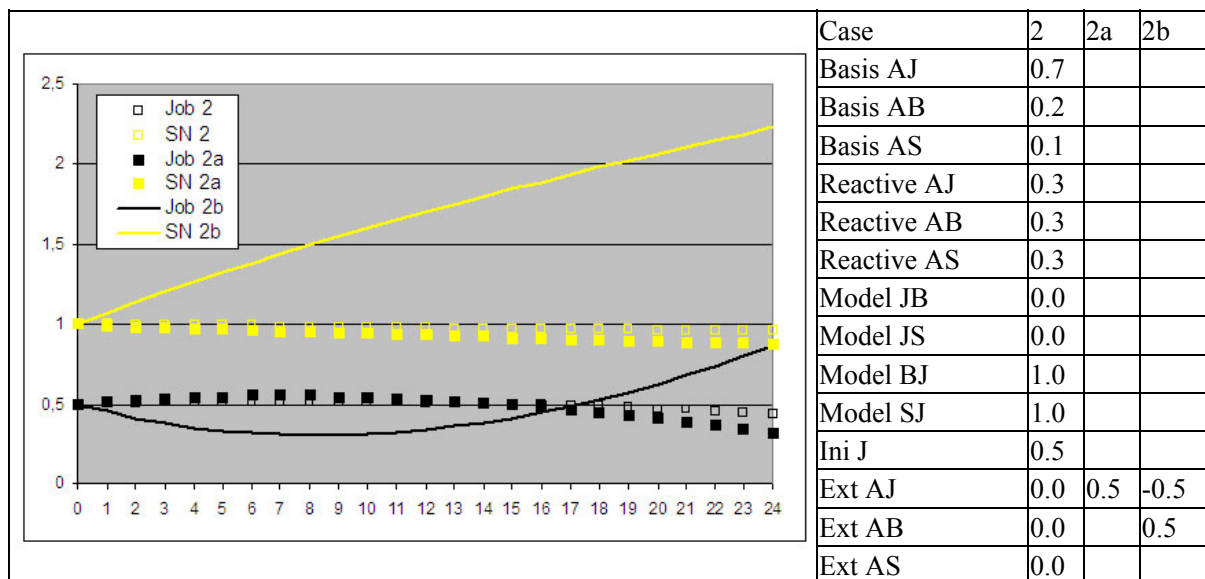


Fig. 4: Case 2 - Better reintegration through more attention to social environment

In addition to those two examples it is possible to demonstrate using this model that beyond certain values of “Model JB” and “Model JS” there are no more possibilities to reach the reintegration by shifting the attention. As already mentioned in section 4.1 in case of unemployment negative implications of “job integration” towards “biography” and “social environment” can only be minimized by individually and authentically adequate interventions, e.g. in the form of financial support or through training and qualification.

5. Conclusions

Using system dynamics modeling it is possible to simulate important parameters of problem constellations in social subsystems and social scenarios in a way that the decision making can be enhanced considerably, taking adequate forms of reaction, motivators, controls and patterns of action into account. That means to enhance and to take in account the momentum of the authentic self-organization as a decisive starting point for success (see Rainmer 2009). In addition, a de-ideologization takes place, which is helpful for both practical and theoretical purposes.

This result, however, makes further research necessary. In particular, the empirical sociology and the pedagogical operational research have to focus on the social micro scenarios, primary systems, lifestyles and biographical case structures to an even greater extent in the future. This would facilitate more valid data sets which might then be able to profile the upcoming problem solving in the social daily routine. We are applying this model already in concrete coaching and mediation measures with qualified unemployed.

References

- Colemann 1976** James S. Coleman: Social Structure and a Theory of Action. *Peter M. Blau (Hrsg.): Approaches to the Study of Social Structure, (76-93), 1976*
- Davenport 2000** Thomas H. Davenport, John C. Beck: Getting the Attention You Need. *Harvard Business Review, Sep/Oct2000, Vol. 78, Issue 5, 2000*
- Deutscher Bundestag 2003** Viertes Gesetz für moderne Dienstleistungen am Arbeitsmarkt. *Bundesgesetzblatt, Jahrgang 2003 Teil I Nr. 66, Deutscher Bundestag, Bonn, 24.12.2003, <http://www.bgblportal.de/BGBL/bgbl1f/bgbl103s2954.pdf> (11.03.2010)*
- Giddens 1991** Giddens: Modernity and Self-Identity. 1991
- Peschke 2006** Robert Peschke: Moderne Dienstleistungen am Arbeitsmarkt. 2006
- Rainmer 2009** Markus Rainmer: Pädagogisches Controlling. 2009
- van der Loo 1992** van der Loo, van Rijen: Modernisierung. 1992
- Vetter 1992** Hans-Rolf Vetter: Die moderne Erwerbsbiographische Konstruktion. 1992
- Vetter 2007** Hans-Rolf Vetter, Bo Hu: Work-Life-Balance of Mothers - an Empirical Approach toward Modern Educational Tasks. *The European Conference on Educational Research, Ghent, Belgium, 19-22 September 2007*
- Vetter 2009** Hans-Rolf Vetter, Bo Hu: From Teaching to Vocational Coaching, From School to Profession, From Learning to Self-Navigation. *The European Conference on Educational Research, Vienna, 28.-30. September 2009*
- Wacker 1976** Ali Wacker: Arbeitslosigkeit. 1976
- Weber 1964** Max Weber: Wirtschaft und Gesellschaft. 1964