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SCIENCE DYNAMICS REVIEW®

JOURNAL FOR THE DEVELOPMENT OF SYSTEMS EDUCATION
ČASOPIS PRO ROZVOJ SYSTÉMOVÉ VZDĚLANOSTI

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Science Dynamics Masterclass

Examining wisdom of our fathers and mothers ...

In the seventh issue of SDR, we started a series called Ex hereditatem patrum nostrorum and chose an old Czech proverb from the legacy of our fathers. In the introductory article of this issue, we will try to prove or refute its validity.

Dispute between cheeky attitude and inherited farmyard.

-aur-*

Abstract: Seventh issue of the SDR Czech edition contained the first article of a series called "Ex hereditatem patrum nostrorum," with a reference to an old Czech proverb, fancied by my father. Is our ancestors' favorite proverb valid or not? The first part of the article is devoted to the development of the reasons for which the series is created. The following is a description of working on a causal loop diagram and creating a simulation model. Two antagonistic scenarios are compared and based on the comparison of the simulation results, the dispute is settled.

So far, we have examined in our journal, among other things, the implications of the spread of viruses and bacteria, the consequences of decision-making by systems-ignorant government, the consequences of ideological confusion of languages in psychiatry and the effects of the absence of a state security strategy on its people. In the seventh issue, as part of the defense against another attempt to **rewrite history**, the series "From the Legacy of Our Fathers" was launched, including, of course, **mothers**. Why didn't we mention them explicitly? Because our mothers know well about their irreplaceability and the respect we have for them, but most importantly and above all they have learned to be **implicit** and jealously guard this position. They know that by being implicit they are fulfilling one of the reasons for their existence and that so, and only so, they will be everywhere and in everything, even though it seems that not at first glance. Thus, our mothers **implicitly understand systems**, and interaction with their men and sons has taught them that the opposite of being implicit is being **explicit**. Our mothers prove with their beautiful femininity that there is no poorer creature than the explicit bearer of the double X on the twenty-third chromosome. For we know from Genesis that the violation of the principle of complementarity will not create a god, but a monster **.

Our mothers are well aware that the ongoing frontal attack on their fathers, men and sons is an attack on themselves as well, so not only did they approve the name of the series, but also, the way only mothers know, reassured us in the correctness of our path.

A key part of heritage is the wisdom of ancestors. Not in the form of a suddenly acquired ability, because **vertical transmission of wisdom** *en bloc* is not possible, but in the atomized form of fragments of wisdom preserved for generations as **proverbs**, **sayings** and **teachings**, transmitted by education and training from teacher to pupil. Because wisdom was considered one of the most valuable virtues for generations, and Solomon himself chose it instead of the longevity, wealth, and death of his enemies, the high social status of wise often created people that learned how to pretend it. The **destructive potential** of the **supposedly wise** is well known since the beginning of time, so it is not surprising that even the greatest of the Old Testament prophets warns against pretenders ***.

Exploring an individual's wisdom is a complex, time-consuming task. A wise decision in a situation that occurs at time *tn* can be followed by a very unwise decision at time *tn + 1*. In that case, can a person with a wisdom score of 50% be called wise, or not?

... continued on page 3 ...

** *Nephilim autem erant super terram in diebus illis...*

***Vae qui sapientes estis in oculis vestris, et coram vobismetipsis prudentes.*

Does a wise person have to exhibit wisdom in 100% of cases over the observed period? Can someone be called wise if he or she was unwise in their youth? In what year of life does wisdom have to come in order for a person to meet the criteria? Can someone who has been wise for forty years but suffered from dementia at the end of his life remain the title of wise man? Can Solomon still be considered the wisest of people who have ever lived and will live when his policies were autocratic and much closer to the bloated moral misery of Oriental rulers compared to his father David's government? Can the permanence of the wisdom of others be assessed by someone who is wise only occasionally, or is not wise at all? Can a wisdom be evaluated by a graduate of the field of "robo-American, multimedia comic studies, or does the old Latin proverb° apply in such and similar cases?"

If you tend to consider yourself wise, and (at least) *prima facie* the prophet's warning from previous page does not apply, you know very well that judging anything **without predetermined criteria** is not only **unwise** but also **unacceptable**. You also know that the evaluation, based on feelings, has the value of a **hysteric person limbic system stability** - factual zero. Although, especially today, emotional judgements make up more than 99.999% of all judgements and decisions [1, 2]. If you still ask why, even after reading the references, open the Jung's Aion and the description of the enantiodromic system dynamics, which at the beginning of its existence is governed by the masculine, spiritual and good principles and now is nearing its end. Suddenly, this paragraph should start to make sense. To conclude, the assessment of a person's wisdom is a **non-trivial task**.

Is that a reason to despair? Maybe so, but we can turn our attention to fragments of wisdom of those who were here before us, specifically to lessons, proverbs, sayings, and teachings. And more specifically to my (and perhaps your) father's favorite proverb: "Cheeky forehead is better than a farmyard," implying that insolence will take you further than inherited money...

Seventh issue of the SDR Czech edition contained an image with a couple of variables that should help students start build their diagrams. In the English edition, we have to start from the scratch.

The question we are looking for an answer to has already been asked: "Is cheeky forehead better than a farmyard?" What remains to be determined is the criterion by which we will decide. It is obvious that the cheeky forehead has no special price compared to the plow yard, it consists of the frontal axis, *musculus frontalis et galea aponeurotica*, there is the frontal branch of the trigeminal nerve (*supraorbitalis* and *supratrochlearis*) and the facial nerve. Add some blood vessels and skin and that's practically everything worth mentioning. Nevertheless, the forehead has incalculable value to individuals, having it and not having it (large hole into the skull...) is a matter of life and death, but selling a forehead on the market is probably a difficult transaction for most of us. On the other hand, the cheeky forehead is, in the sense of the proverb we are examining, a potentially valuable commodity that can bring the owner a **significant social position** and the usually associated considerable **financial benefit**. Let the **value of property** be the primary criterion for evaluation.

... continued on page 4 ...

° *Si tacuisses, philosophus mansisses...*

Now try to imagine an experiment comparing the value of a cheeky forehead and a farmyard in reality. It would require two subjects. One with a cheeky forehead and the other equipped with an inherited plow yard. Both subjects would be monitored for a predetermined period of time in terms of the property value, and then, by simple comparison, the experimenter would decide whether the hypothesis of a higher value of the cheeky forehead is valid or not. However, this brings us to the traditional (unsolvable) problem of the classical experiment. It does not matter whether we compare the drug and placebo, attitudes, motivation or anything that makes sense to compare, because we always compare two entities, in which, in the vast majority of cases, we **mistakenly assume** that they differ **only in the examined element**. Thus, the number of worthless or even harmful research reports based on non-existent assumptions is growing, and mankind is reeling with the joy of unstoppable scientific progress, although the only thing that grows is chaos and deception...

Tab. 1 Exogenous parameter values for S1 and S2 scenarios

	Scenario name	
Variable name	*S1*	*S2*
Insolence	0	100
Inherited property value	100	0

The Gordian knot can be untied in some cases. By comparing two simulation scenarios of a single structure, which will differ by just two features - the **degree of insolence** and the **value of the inherited property**. You can find the settings for the values of the variables in both scenarios in Table 1. The key exogenous variables have inverse values. In the first scenario we have a humble rich man and in the second a ruddy, poor as a church mouse.

°° *Moskowitz: „"It's so miserable in the Czech Republic that it can't be worse." Kohn: "But it can!"*

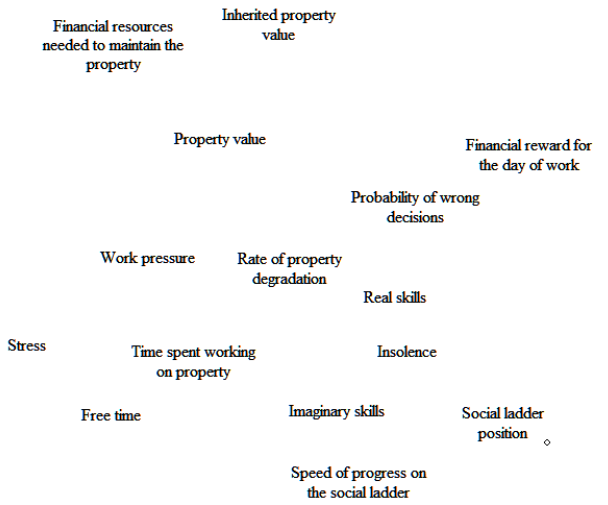

Fig. 1 Selected elements of the causal loop diatram, version 2

We will leave both values of variables, *insolence* and *wealth* unspecified, although wealth can be measured in monetary units. Insolence is, of course, a **dimensionless soft variable** that will take values from zero to x, the maximum of which we do not know yet. If you ask why we do not set the audacity in the so-called Mark's range, used for soft variables, i.e. <0; 100>, I don't even have to answer, because the answer is obvious. Or isn't it?

If not, then remember that determining the upper limit in the quantification of negative phenomena is a difficult to impossible thing, as evidenced by the conversations of Messrs. Kohn and Moskowitz°°. By analogy, even the greatest audacity can be overcome. The maximum values of both key variables can only be determined by simulation.

Figure 1 shows an updated list of variables for building a causal loop diagram. If you have this issue of the System Dynamics Review in accordance with the study department's recommendation, printed on paper, try to complete the connections between the variables yourself.

... continued on page 5 ...

Before you start working, the *Value of Inherited Assets* is the only exogenous variable in the whole diagram. Done? Compare your diagram with mine in Figure 2. You may have better diagram than me. My strain of thought went like this. The higher the *Property value*, the higher the *Degradation of property*, because a degrading garage degrades per unit of time "cheaper" than a villa in Malibu (40 bedrooms + 1 kitchen). *Property management* also requires financial resources, whether in the form of property taxes or a variety of fixed-cost payments.

This also applies to fixed or purely imaginary (financial) property. Even in the case of financial investments, one pays administration fees, income taxes or other forms of ransom to various parasites, either to state authorities or to "investment managers". The financial complexity of asset management increases in my diagram, along with the value of assets. *Property management (Time spent working on property)* increases *Real Abilities* that reduce the *Probability Of Wrong Decisions*. Wrong decisions reduce the *Property value*.

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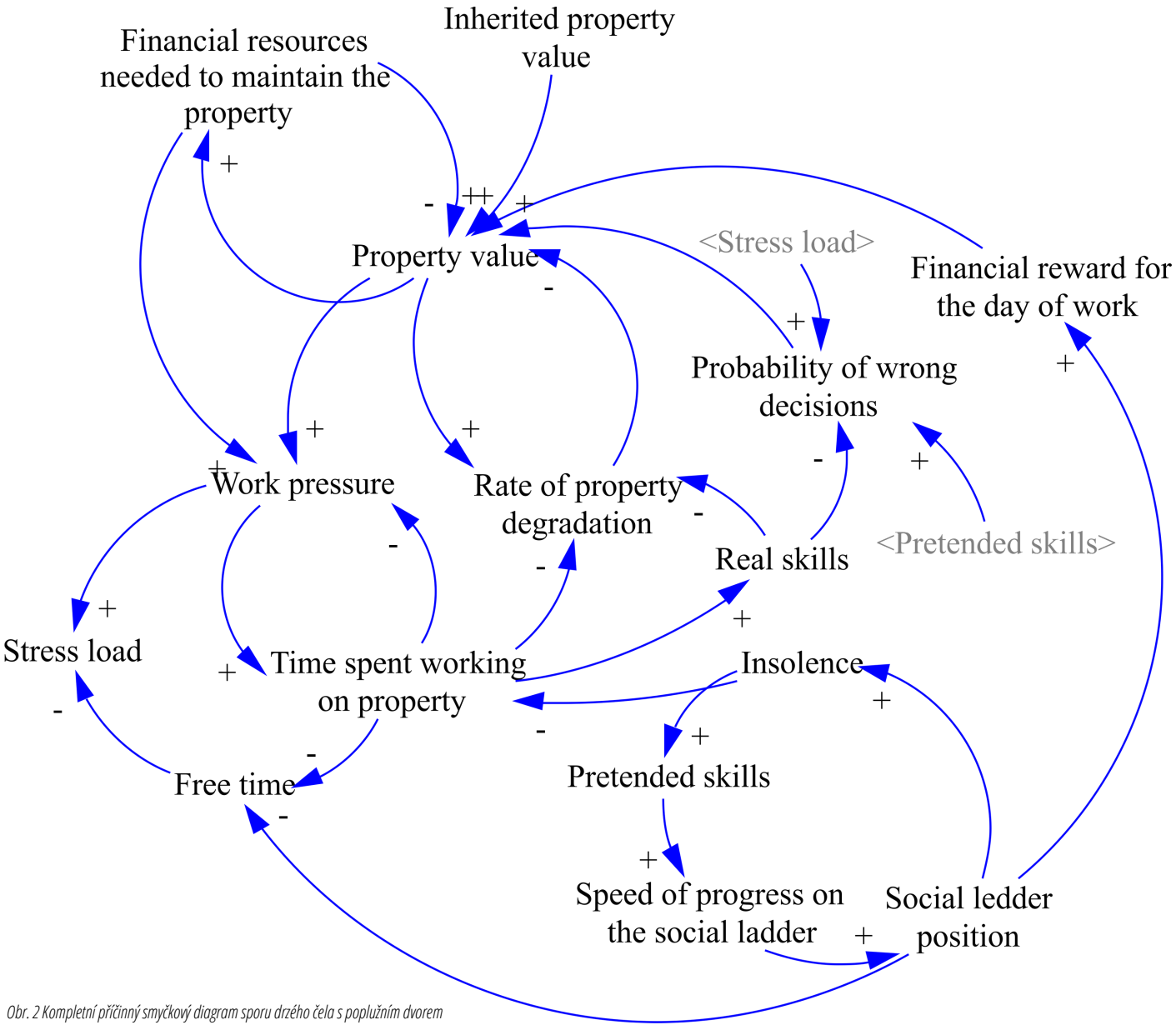

Obr. 2 Kompletní příčinný smyčkový diagram sporu drzého čela s poplužním dvorem

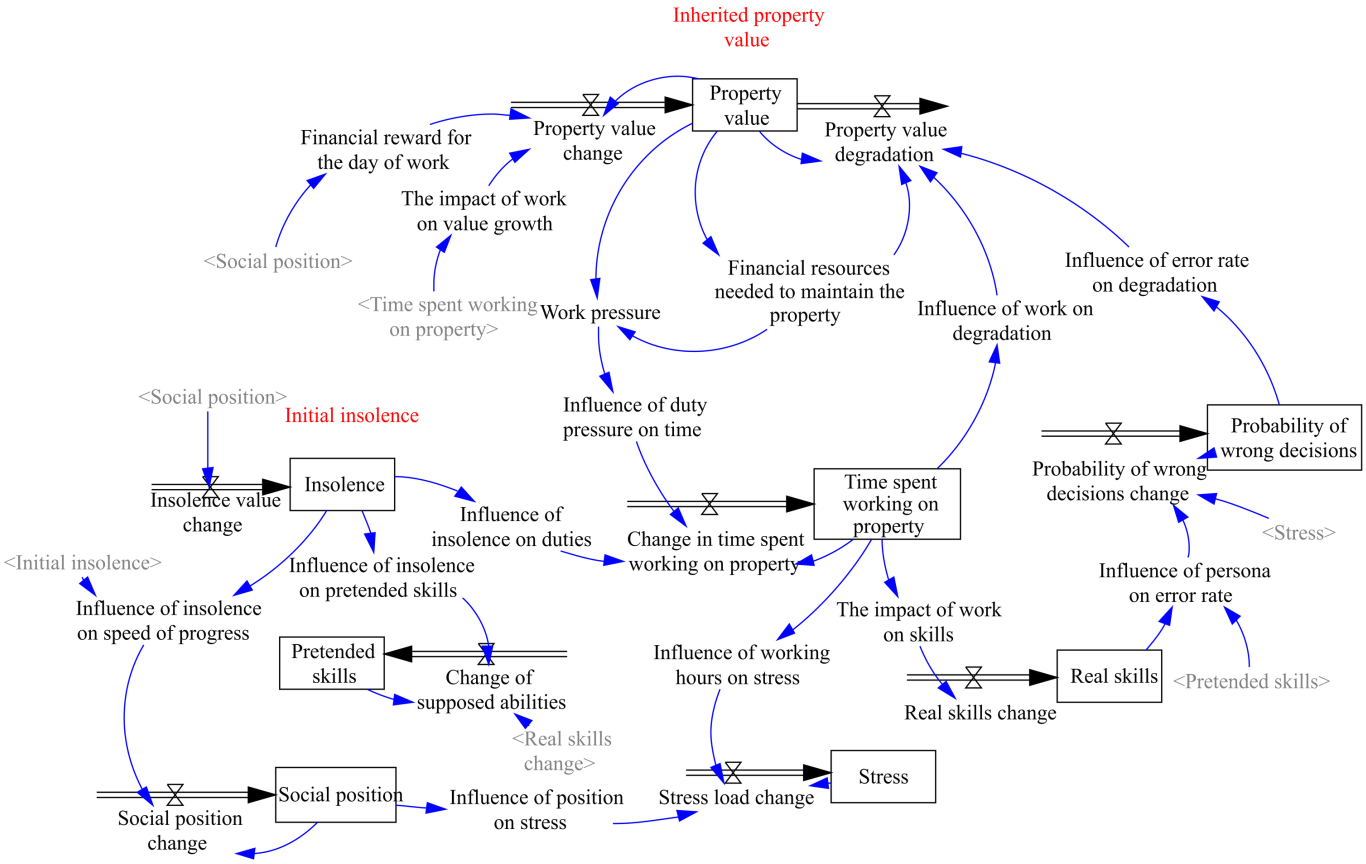

Fig. 3 Complete model structure

Insolence immediately reduces the amount of work on property (assets management), as hard, honest work is not the primary interest of a person with a brazen forehead. This is how the Pretended *abilities* get created, as the person advances along the social ladder to increasingly lucrative *Social positions*. With Leisure, it's bad in both modalities. If the *Property management* does not decrease the *Free time*, it will be taken away by the *Fulfillment of social duties*, which increase with the importance of the *Social position*. The resulting *Stress* then contributes to *Probability of wrong decisions*. Although the diagram makes a lot of sense, I does not help to decide whether the proverb is right or not. Both modalities are more intertwined than I originally thought. So all that remains is to create a model, simulate both scenarios and decide on the basis of the simulation results.

Try to create the model yourself. The values of variables, especially in the part concerning the progression on the social ladder, take as a basis of graph functions the differences in income of politicians in your country. Remember that the primary driver of growth in our model is **insolence**, not real ability or salary. The values of most variables are clear, I am gonna mention only some slightly more complicated ones. Variables that are present only in the model (and not in the diagram) are used to scale the variable. For example, the *Work pressure* and the *Influence of Duty Pressure on Time*.

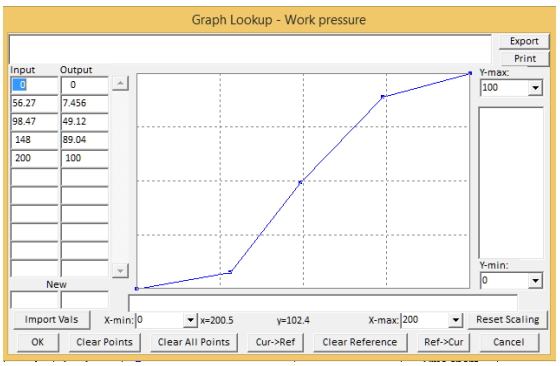

Fig. 4 Graph function of the influence of Property value on the Work pressure

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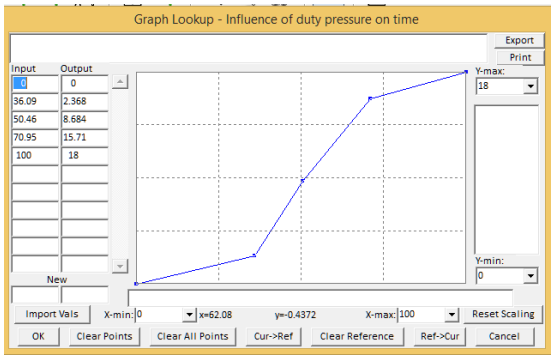

Fig. 5 Graph function of the influence of the Pressure of work duties on the time spent working on property

The original range of assets 0-200 is converted into daily time requirements. If you ask whether it is possible to do so in a single variable (called, for example, the effect of the amount of assets on daily time requirements), then the answer is yes. A more complicated method is chosen because it makes the transfer more understandable to the observer. We have already talked about the limits of certain variables. Neither *Property value* nor *Insolence* have limits in our model. The question is whether the *Social position* has any limit. You are right to argue that it is difficult to be more than a prime minister or a president (in terms of position on the social ladder). But there are those who, most of all, want to be the "director of the globe," i.e. the Secretary of the UN General Assembly, and claim that this is the most important position in the world. Others argue that the most powerful person is the President of the United States and others that the head of the health organization has enormous power, because his decisions, possibly based on hatred or incompetence, will cause the deaths of hundreds, thousands, or even millions of people. Try both scenarios, but remember that if you **restrict one key variable**, you need to **restrict all the others**. In many cases where you need to set a limit that you do not know before the simulation, you can use Mark's method of calculating the **rate of change**.

For example, you will not calculate the absolute value of an asset, but its change from time *t0*. This will give you two, three to *n* times the initial value on the x-axis, and the unknown space will be, at least emotionally, a little more tangible. If I have at time *n* twice what I had at the beginning, it is easier to estimate the behavior of the modeled entities. The method does not always work. Can you describe at least one such case? For example, in a situation where I had nothing at the beginning, I will have 100 times more property with 100 units of assets in time *n*, but in terms of limits and tangibility, I will be exactly where I was before applying the method... All variables calculated by negative feedback (eg Stress) are defined as a goal seeking loop. Thus, the equation for Changing the Stress Level looks like this:

Change in stress level = MIN (((Influence of position on stress + Influence of working hours on stress) -Stress) / 5, (Influence of position on stress)
stress + Influence of working hours on stress))

We know that either the *Influence of position on stress* (in the case of a cheeky forehead) or the *Influence of working hours on stress* (in the case of the heir of the farmyard), which take values in the interval <0; 100> so that the *Stress* value does not exceed 100.

The other negative feedback loops are set with a delay time of 3-5 years, the whole simulation lasts 40 years, which should be the time of economic activity in both cases. The inheritance is thus acquired at the age of twenty, at the same time the insolence begins to be socially applied. The simulation begins in 1895 and lasts until 1935. True, those in Europe were badly affected by the First World War, but if the farmyard did not stand near Галичина or Verdun, it could survive the war without notable damage.

... continued on page 8 ...

And for a insolent forehead, a period of instability is a breeding ground.
It is up to you whether simple accumulations (e.g. *Insolence*) will be limited in the model in terms of maximum, their inflow can simply be:

$$+dt\ (\sum connected\ variables)$$

In that case, however, keep in mind that a possible **positive feedback loop** may cause the model **instability**. To prevent this, specify **meaningful limits** for subsequent variables. For example, in psychological models, fear does not grow *ad infinitum*, at a certain value (from a neurobiological point of view) the substrate is saturated and the resulting behavioral parameter cannot grow further. However, if you are setting limits, do not forget the Challenger catastrophe caused by the **incorrect assumption** of the size of the sealing rings under the given conditions and set the limits **not** "under the given conditions", "ceteris paribus" or other pious wish, but within **biologically** or **physically** given limits [4].

When you have the model ready, set the scenario name S1, *Inherited property value* to 100, and *Insolence* to zero. Run the simulation, then change the name of the scenario to S2, set the *Inherited property value* to zero, and the *Insolence* to 100. Run the simulation again and compare the results of both scenarios. Did it turn out the same as mine in Figure 6? The green pattern of the S1 scenario expresses a slow, prudent increase in the value of the property of an honest person who has decided not to waste the inheritance. The red scenario S2 expresses the value of the property of a person who gets an empty pocket and a good portion of insolence. For a very long time, the later is poorer than the heir, but in the end, he significantly overcomes the heir without "working hard" his whole life.

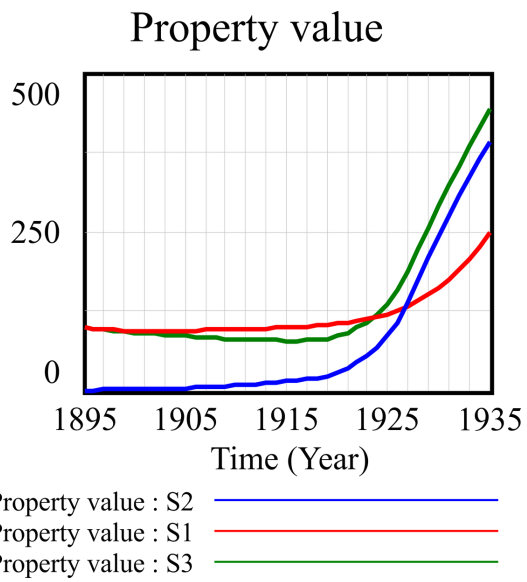

Fig. 6 The result of the simulation

It remains to describe the scenario marked S3. It refers to a man who was born with a cheeky forehead and did not inherit the property, but stole it. In terms of stress, he is worse off at the beginning than the brazen from S2, because he is afraid of being busted. But by the end of the Great War he already knows that he's gonna get away with the crime and further stress in both brazens is caused only by a surge of social duties. The proverb therefore seems to be true. But maybe it would be worthwhile to add a note to the text about the benefit of relentless fingers ...

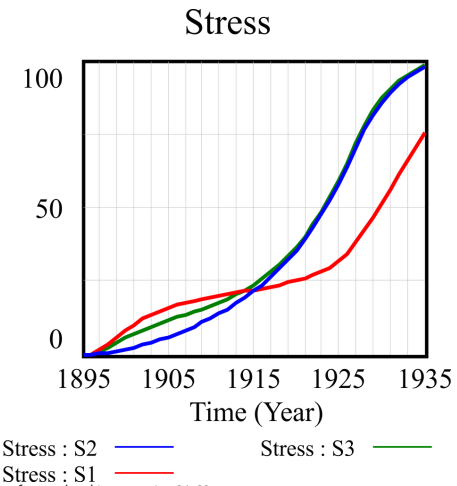

Fig. 7 The course of stress load in scenarios S1-S3

Reference

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COURSE SYLLABUS:

- Government policy setup - existing mental models
- Creating Causal loop diagram of the problem at hand
- Building basic simulation model
- Primary scenarios simulation
- Increasing detail in model structure
- Design and creation of the user interface
- Formulation of policy recommendation and evaluation of recommended policies

SUCCESSFUL PARTICIPANT'S PROFILE:

Participant will be able to create dynamic models of public and government policy in any area of interest. Models will contain feedback, delays and nonlinearity as required by systems approach. The participant will know how to evaluate short and long term effects of any policy.

Science Dynamics Review

Journal for the development of Systems education
Časopis pro rozvoj systémové vzdělanosti

Vydavatel/Publisher:
Proverbs, a.s.
Karlovo náměstí 290
120 00 Praha

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