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Reality psychotherapeutic process with a person that has mental disorders

Nevenka Podgornik
School of Advanced Social Studies in Nova Gorica, Slovenia
nevenka.podgornik@fuds.si

Abstract: *The case study describes the client's story and her own interpretation of her problems, the therapist's understanding of the client's problems by the aid of the concepts of the choice theory, a summary of parts of the conversation, which is important for establishing a relationship, for discovering the client's world of quality, for understanding the client's efforts, for shifting the client from the convictions of the external control psychology to the convictions of the choice theory (she gives to the client the knowledge of the choice theory).*

Keywords: *case study, psychotherapeutic process, reality therapy, choice theory, mental problems*

Introduction

We approach the mental problems from the point of view of understanding the choice theory[1], which substantiates the reality theory. With the constructors of the choice theory – the world of quality[2], the primary needs[3], the total behavior[4], the case study is a review of the use of the psychotherapeutic approach in practice, with which we can help the client regain and preserve her mental health.

The case study exposes the harmfulness of the so-called external control psychology in the client's life and important relationships. The assistance process is pointed at the learning of replacing the external control

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[1] The choice theory is a new kind of psychology that explains that we choose everything we do for different practical reasons – including the dissatisfaction we feel. We alone chose our activity and thoughts, and, indirectly, also our feelings and the best part of our physiology (Glasser 1998).

[2] We learn how to appease our basic needs from experience. The collection of all the good experiences that appease an individual's needs and present a desired, completely personal, interior world that Glasser named "quality world". An individual tries his whole life to change with his doing, thoughts, feelings and physical process, the material world he lives in into a world which would resemble as much as possible to his personal "quality world" (Lojk 1999: 16-17).

[3] Glasser is sure that a person has – beside his existential needs – four basic psychological needs genetically integrated. The need of love (acceptance, appurtenance, collaboration), of power (status, importance, competition), of freedom (independence, autonomy, creativity) and of fun (discovering new things, change and playfulness) (Glasser 2007: 9-18).

[4] It's a belief about the indivisibility of mental and physical. The human behavior is always total: when it shows an activity there are parallel behaviors, thoughts, feelings and physiological process. With all this a person is especially aware of the emotional and physiological components, which he doesn't control directly and that's what he complains to the therapist about. He's not so much aware of the components of activity and thinking that he has under control and that's why he doesn't use them enough to improve his life. A person with the ability to use the components of activity and thinking can indirectly influence the feelings and the physiological process and also affect the physical, mental and social health (Lojk 2002).

psychology with the use of the more effective choice theory, which enables the client to take control over her life once again.

The reality theory is oriented to a comprehension, searching, performing and attending of new activities and considerations with which the client develops more suitable relationships with people and, like that, she satisfy her needs better than before (Glasser, 2007: 239). Until now, in a confrontation with a bad frustration she chose most of her suffering (depression[5], phobias, psychosomatic illness, dependence...) because of unsuitable behavior, although she didn't realize that, but she believed this was her best attempt to regain a better feeling (Glasser 1998: 70).

The client's most important discovery is that she can control and change only her own behavior, but not the behavior of others. When the client learns how to remove the external control from her life, she starts to change her present unsatisfying and stricken relationships with people that are important to her. The change of perception and understanding of other people makes it more effective for the client to appease her basic psychological needs and to regain control over her own life.

The basis of the whole psychotherapeutic process is represented by the relationship therapist-client. This originates from the belief that the importance of the relationship between the therapist and the client is what exceeds the level of individual theoretic models and is the key for a successful therapy, in spite of the essential conceptualistic divergence of different therapeutic modalities.

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[5] In the present text we have replaced the medical terminology and the terminology of the external control psychology with the language of the choice theory. The usage of the gerund (depressing, being stubborn, having phobias, annoying, criticizing...) orients the client to the active view of his behavior and to the possibility of choosing a more satisfying one, in spite of the medical model of illness that perceives the illness as a product of external factors, on which an individual has no effect (the patient fall sick with depression, depression come upon him, affects, he suffers from depression...)

Case study

Mrs. Ela is a 65-year-old retired teacher of Slovenian and English. 9 years ago, she was hospitalized in a psychiatric clinic, because she "was hearing bells, voices and she was seeing distorted figures." She thought that "it's not normal to check repeatedly and in succession if the gas and the water are turned off, the light is off and etc." She came to a colloquy with an idea that so far she was "maintaining" her "condition" pretty well with all the prescribed drugs and that now it would be a good time to reduce the dose of those drugs.

Regarding the medicament therapy, I directed her to the psychiatrist, because I'm not qualified for that type of questions. With some self-reflection on the situation and with a wish for a change, the client has exposed her wish for a better condition. I suggested her that we can look for things to change in her life, to do alone in order to make her feel better, if she wishes that . I explained in a few words that I believe we could influence indirectly our condition with a selection of appropriate manners. I will introduce the concept of comprehensive behavior to the client during the therapy.

When the client agreed to work to improve her feeling, taking active part, I continued the colloquy reestablishing a safe and confidential relation, which would at the same time mean getting to know the client's world of qualities and human relations.

T: I would like to get to know you. What would you like to tell me about you?

K: I was teaching English and Slovenian at elementary school. I loved my profession and the children too. I lived for my job at school. I was living in a one-room flat let in a small village near Nova Gorica and I was visiting my parent's home every weekend. I had my vital rhythm. I don't have a herding instinct to go to places with lots of people. I'm a solitary person. I was at school

most of the time. Lessons in the morning, preparative arrangements in the afternoon, clubs… in the evening I went to my friend for a chat, sometimes I watched her children. Otherwise, I kept to myself. I had a boyfriend for 8 years. We were seeing each other occasionally but it didn't work out. We didn't understand each other. I'm a type of person that when I get the feeling someone want to have me only for himself, I end it. I can't stand the feeling of being controlled. I like to be alone and free. But it's just now that I feel really free, the last 2 years after my mother's death. Before that, everywhere I went, she was waiting for me at the doorway. When I was 15 and when I was 40. She was very afraid for me. And also, she was hoping that I would take care of her when she would be old. That's why she didn't want me to have my own family, because I wouldn't be able to take care of her.

T: What did you want for yourself?

K: I wanted to be able to make choices about my life, to have my mother to trust me, to believe that I'm capable of making my own choices.

T: What did you want to make choices about?

K: About simple things. She didn't let me cook, going out alone with my friends.

T: Did you want that?

K: I wanted that, yes, but I always subordinated to my mother's orders.

T: How so? What did you accomplish with that?

K: Probably some sort of peace, apparent peace – there weren't any conflicts between us, but I was feeling angry towards her and I was having a feeling that I'm being wronged.

T: So, if I understand, you subjected to your mother for the sake of peace, which meant a lot to you. But, if you would have risked that peace, would you acted

differently? If you would have risked the peace, what do you think you'd lose in that relationship?

At this point I confronted the client with the choices she has made and the connection between her choices and her motives, needs.

K: When I tried to do things my way she always tightened her hold on me. I felt a lot better with my father. We all admired him. He was a pilot, a shaped, strong man. Determined and severe. When he came home, there had to be total silence otherwise we were punished, even scuffled. He had a mistress, so the situation at home was a catastrophe. Then he had a stroke and my mother and I took care of him. My mother died six years after him. I lived with my mother from the day of my pensioning until her death. She was afraid to be alone, so I stayed most of the time confined in the apartment with her. I only ran to the supermarket and back and if it took me more than one hour, she was beside herself. I gave up going out with friends.

T: So if I understand, you had to choose between the appurtenance to the love for your mother, your freedom and the affiliation with other people. And you had chosen the first one. Well, your mother is deceased, therefore it seems illogical to continue researching this relationship, but we can examine it if there's something familiar occurring in a present relationship, important for you.

A small summary about the client's family life tells us about her perception and experience of her mother's manipulation – a victim of supervised behavior which she couldn't change. Pondering and analyzing how other people behaved, trying to control her wouldn't be productive, but we shouldn't overlook the fact that she accepted this kind of behavior and it's logical that she sees clearly the motives of her choice.

Going on further, I concentrated on the relations with the present. I followed the conviction that her problems with mental health caused the difficulties in other relationships.

T: I can understand from your story that you don't have a family of your own.

K: No, I don't. Later I realized that being alone suits me and besides that it's been a long time since I've been in a relationship. I have a brother. When I was a child I wanted a brother and when he was born it was the happiest moment of my life. When I came from school, he was in his cradle and I told him everything that happened in school. Then I drove him to the kindergarten, we've always been together. We both became teachers.

T: This kind of connection probably persists forever. How are you two get along today?

K: We've always got along together. Later, our relations had been more or less severed, because I don't get along with his wife. I see my nephew like 5 times a year. My brother comes to see me on his way home from work, but then he hurries home so his wife won't know that he was visiting me.

T: How are you satisfied with these short visits? Are they enough for you?

K: No, I'm not satisfied and I suffer a lot because of that. But I don't want to have anything to do with my sister-in-law, we're too different. The two of them are my only family, but I can't get to them.

T: What kind of relations do you want to have with them? What do you want to be different?

K: I'd like to go visit them sometimes. I went a couple of times but I've got the feeling that I'm not welcome, so I withdrew. It's been a long time since I've been there. I'd like to go somewhere with my brother, with his family, to hang out.

T: What would all of that mean to you? How would it make you feel?

K: I think I'd be happy and my life would have some major meaning, as well for my nephew, who I'd like to see more, but she didn't let me.

T: Have you ever talked to your brother about what you want your relationship to be?

K: No. we both know what the problem is, but we never actually talked about it. I'd like to talk to him, but I never dared. I don't want to cause dissension. She's like a wolf; she keeps an eye on them and won't let them breathe. I think she doesn't want them to hang out with me because I've been in the psychiatric hospital in Idrija.

There was another conviction, belief with which the client put herself in the role of the victim, but I ignored it deliberately and concentrated on her behavior – how can she contribute to improve their relationship.

T: I can see that the relationship with your brother means a lot to you, that you'd like to hang out more with his family, but you see your sister-in-law, like a person she is, is preventing you from doing that. Like you said you don't get along with her because of that. We don't know for sure what she is controlling with some manners, but we can talk about how could you establish a better relations with the family despite her behavior. What do you think?

K: I think my chances are very limited. They won't let me near them. Her behavior hurts me too much.

T: I believe it hurts you, but do you think that your relations with her would improve spontaneously?

K: Of course not, but what can I do?! I feel so weak.

T: How can you find your strength again? What would you do, despite your sister-in-law's behavior, to take over some sort of active role in forming your relations with them?

K: I taught about just showing at their home, at the doorway, without notifying them about my visit like I was doing years ago. But I realized that I'd put my brother in an unpleasant situation and that I'd only hurt him. Somehow I

didn't want to take what I wanted this way. In some way I accept that my brother comes when he can and this is it. Probably it's all we can have. Except if he comes to his senses and divorces from that snake. But I think he would rather die than leave her.

T: Anyway, it's his decision and he will decide knowing that he's doing the best he can for himself and his loved ones. All you can do is start to searching for new methods in your relationship with your brother and his family in order to create good relations with them and satisfy your needs. The perception is also something we choose. Does the association of your sister-in-law with a snake help you improve the relationship with your brother?

K: (laugh)

At that point I went for the professional inclusion in order to introduce the client to the psychological needs and methods with which we try to satisfy them. This is also an opportunity for the client to think about the choices she made until now, even the bad ones.

T: … I've already mentioned that every behavior has its own purpose. With the choosing of the behavior we try to satisfy *ours so-called psychological needs – to love and to be loved, to have a sensation of appurtenance, connection, to have the possibility to work in all the fields where we feel strong, competent, to be free and to have the opportunity to develop our interests, to realize our needs about knowledge, learning. These needs are common to all of us, the only difference is the way we satisfy them. As a matter of fact we are looking all the time for the best methods for us, since it rend possible to make us feel good.*

K: And what are the needs that my sister-in-law is trying to satisfy*?*

T: It's sure she's also trying to satisfy some needs. However, it's her behavior, her "images", figures with which she realizes herself in different roles. But I don't see any point in talking about someone else's choices, about choices we don't have any influence on. I propose we continue our conversation in the

direction of searching for possibilities to satisfy your psychological needs. You say that you have "limited" visits with the people that mean a lot to you.

K: Yes, very limited, or we better say measured out. But I was thinking right now that I also wanted to have my brother all to myself, like when we lived together and I took care of him all the time. I think I missed taking care of him, this attachment… so this loss hurts me so much.

T: Can you compensate this loss with something else?

K: You're probably thinking about a new relationship.

T: It could be a new relationship, or you could improve the relationship with your brother, maybe connect with your sister-in-law and end hanging out even with your nephew.

K: I don't know how to connect without compromising my brother's marriage.

T: Well, I think that you didn't compromise your brother's marriage, he took care of that by himself. But you could search for methods to stay in this family under these circumstances, more connected to your brother and his family, taking into account that the relationship with your brother is very important to you, like we talked.

K: I don't think this would do, because he's been too much under her influence and she'll never accept me.

T: Maybe their behavior will remain the same, although if you get a different attitude in the relations with them this would be very improbable. How would you approach them?

K: I don't know. I don't have any hope that we could ever be close.

T: If you try with a new attitude in your relationship with them, will you have anything to lose?

K: No, but I don't see any real possibilities to change anything in our relationship.

T: You said that you took care of your brother; how can you show your care now that you're both adults or maybe take care of your nephew, your sister-in-law?

K: Concerning my nephew I was willing to help, because he's not doing so well in school, but she wouldn't let me. She said they would solve the problem by themselves and so, I backed away.

T: If we lay aside your sister-in-law's attitude and we take into consideration the theory of choice by which no one can "direct" us if we don't want to… maybe from this point of view you can see another choice, beside the withdrawing. One that would make you feel better.

K: I don't know. I think that if I would persist there would be a conflict and I don't want that.

T: Of course, it's comprehensible. This wouldn't bring you closer.

K: Yes, although I don't want to be close to her.

T: Is it possible for you to be close to your brother and your nephew, without being close to your sister-in-law?

K: Good question. Probably not, because she controls them.

T: So you believe that you couldn't be close to your brother, without being close to her. Are you ready to start connecting to her gradually? Or it's more acceptable for you to maintain the relationship with your brother as it is now? I also believe that you'll have some difficulties connecting with this family if you don't do anything to improve the relationship with your sister-in-law. If you want to restore some sort of relationship with her, we can talk about some methods how to do so.

K: Yes, but nothing works with her…

T: What have you tried until now?

K: I hadn't done anything in some time, because there's no communication between us. She said that I'm dead to her, so she's dead to me.

At that point I decided, after some attempts of avoidance, to confront my client about her willingness to improve the relationship with her sister-in-law.

T: Do you even want to become closer to your sister-in law?

K: No, I didn't even want to be involved with her. It was interesting to me because of the relationship with my brother, but no, our relationship has come to end a long time ago.

T: If I understand correctly you don't want to work on that relationship at all. But that also means the relationship with your brother won't change.

K: Let it be this way. We'll manage ourselves.

I lead the conversation from my client's position of victim and the search for causes for her misfortune in her relationships with people (her mother, brother, sister-in-law…) to an active role, where she can utilize new choices to become close to the people she has in her world of quality. But it seems that the client's belief, that is "the others" who are "guilty" for her misfortune, is firmly grounded in her and that she still accepts one's control over her and she uses that to cover her lack of engagement in taking control of her life. In the same way she explains the relationship with her brother and her sister-in-law. In her perception she sees her brother as a victim of his wife. I think we came to a sort of realization that she can choose her behavior and that she can behave independently of how other people behave. But in the continuation, we'll have to work on the client's consciousness of her personal freedom.

But we can't overlook that Mrs. Ela's life story tells us about the absence of (satisfying) relationships. I think the difficulties she is confronting (creative insanity, obsessive-compulsive disorder) are closely linked with the loss of possibilities for an effective satisfy of psychological needs – the illness which has interfered with her physical appearance and has make it impossible for her to do her job (to a large extent – this is her "picture"), which for her was more than just a job. It represented the relations where she satisfied her needs. In this situation, the client has chosen an ineffective creative behavior and so she has created a new total behavior, but the components are linked one to another so the modification of one of them is the source of another total behavior. The theory of selection explains that we reject the miserable total behavior when we develop more satisfying thoughts and actions. And that is what I think is the purpose of the therapeutic process with Mrs. Ela. She needs to judge, to understand through some self-estimation the (in)efficacy of the doing she chose and to try to make better choices to gain what she really wants – a better feeling.

I didn't ask the client about her "strange" behavior (the constant controlling of the gas, water…). This way, I didn't let her control me by using this and I wanted her to see that she doesn't need it, that she doesn't have to accept everything the creative system offers her.

T: I remember the light in your eyes when you were talking about your job as s teacher. I felt your dedication to this profession, the love for the children… How did you experience your profession?

K: This was my life role. My mission.

T: What has changed for you when you stopped teaching?

K: I'd say that a lot has changed. When you talked about the importance of relationships I realized that leaving the place where I worked didn't mean just losing my job, but also losing all the people that meant something to me. I lost all my coworkers that I got on well and usually hang out with, my friends and the children, I guess.

T: What is that you find in your relations with the children?

K: Certainly some sort of contentment – of doing well my work, of being a good teacher, also, of being loved by the children. I had the sensation they love me, that they accept me and also that they need me. Even if this sounds bad, it was a good feeling.

T: By helping other people, we satisfy *our need for consideration. The need of power is one of the needs we need to satisfy in order to feel good. You mentioned how you have satisfied your need of appurtenance, acceptance, respect, you gained new knowledge, and you had fun… in the relationships with your coworkers, the children and your friends. Maybe we should think about how, in what way and in which relationships you can satisfy your needs today?*

K: I don't know. I think everything stayed there (tells the name of the village) – the work, children, colleagues. I'm not in touch with any of them. The generation of employees has changed some of my colleagues may be already deceased. Here in Nova Gorica I have only my brother and a friend with whom I sometimes go to the supermarket, we talk on the phone, otherwise we don't hang out because she has a grandchild and she's still working. Besides my brother, there's an old woman from the neighboring block that sometimes comes to visit me. To be honest, sometimes she is a nuisance to me.

T: Earlier we talked about your activities in your past relationships. What do you miss the most of the things you enumerated?

K: Definitely the teaching. Nothing fulfilled me like that.

T: What would it mean to you if you could teach again?

K: I think I'd feel strong, important and useful again.

T: These definitely are not accomplishments that everybody has.

K: Yes, I agree. But right after that I think that I don't know how to use them, because I don't feel all right. And all my problems.

The client's response is a typical example of trying to run from the responsibility in the moment she realizes that she has the possibility to make new choices, but she's not yet ready to put in some effort for the change.

T: What problems?

K: There are a lot of them. The fear that I'll go crazy again, the fear of crowds and the dark in a hall, fear of going in a pool. I wonder how I'll ever go into a pool; what if I fall and be a nuisance to other people. I haven't driven a car in 4 years because I was too scared. I had dizziness for a long time. I don't know if it's because of the medicines... The doctor thinks everything is all right. I'm not what I used to be, it's like I'm drugged.

According to Glasser's choice theory all the symptoms, irrespective of their kind or intensity – how crazy or painful they can be – are created to help retain the anger that is present when we are frustrated. Ela was angry because her quality of life was encroached by an intestinal disease or her perception and her belief in reference to her illness. In the other case she maybe would have taught about ending her life if she wasn't controlling her anger with the symptoms. But she's never talked about that because she was trying to gain some control using other ways (hallucination, auditory hallucination, compulsory acts…).

We should think of these symptoms as a cry out for help. The "perfect" people (Ela's mother's message to her) don't ask for help, even more, they don't need it. That's why she didn't ask, but her symptoms were a warning. This type of expressing was more acceptable for her.

We can use the symptoms to control the circumstances, so it's possible that in that time she was getting more of her brother's attention (I couldn't say that for sure, I didn't check with the client). The client was using the

symptoms also to avoid the pain of the unwanted and traumatic circumstances (forced retirement or a job with shorter working hours, weakness because of stoma ?...).

I listened attentively to the client's description of her symptoms, because I believe this is very painful for her, but I didn't devote too much attention to this talk. I believe that all 4 components of the total behavior are connected one to another and that our physical health and feelings are a reflection of our deliberation and activity (Wubbolding, 1988: 44-45). That's why I wanted to find out more about her activities at the time she was happy. She has already told me how she was successfully satisfying her basic physical needs (teaching, working with children, hanging out with coworkers...). I think this information is important for our further work. The information, that she's realizing she's "not herself anymore" when taking the medicine, is very important. This shows us that her creativeness is not entirely paralyzed and that she wants to satisfy her needs.

T: Can you describe yourself, what were you like in the past? What pictures of you come to you mind when you think of that time?

K: I was happy, full of energy and hunger for life. In the morning, on my way to school I stopped by a friend for a coffee, then we went to school together, followed by classes, kids at the school, literary club in the afternoon, we were writing the gazette, a competition for the reading badge. I was full of energy, full of ideas, spirit... I never had health problems, in the last 25 years of work I took only 1 day off.

T: You were leading your life splendidly and you were making choices that made you happy, satisfied and which satisfied your needs. What happened next?

K: After that I fell ill and I had an intestinal operation. The doctor in Ljubljana suggested me to work only 4 hours. The fact that I wouldn't be able to teach depressed me. What should I do in (the) school for only 4 hours?! The school was always at the first place for me! In the same year I started to have

hallucinations and hearing things. This has annihilated me. These facts were followed by my hospitalization and then vegetation from day to day.

T: I'm so sorry for what happened to you. But I'm thinking, what if you had the possibility to work full time, despite the doctor's suggestion – like you wanted?

K: I don't know if at the time I gave a thought about other possibilities. It seemed right to me to follow the doctor's orders. Although it's questionable if that decision was the best for me. After that I didn't have the will to do anything. Even today the days are all the same. In the morning I go to the supermarket to get things for lunch, later I sit around in the apartment, watch a movie on the TV, a serial...

T: What did you like to do when you had some free time?

K: I loved reading. I've read all the juvenile books. I read 2 or 3 books per week.

T: Wow, that's a lot. Do you still read?

K: Sometimes. Less than I used to. I prefer reading magazines. I have to go to the library to get a book and I don't have enough money to buy them.

T: There's a great library in Nova Gorica.

K: Yes it is, but I'm scared. I haven't been in a library for ten years. I have some very bad memories about the library, you know. I remember that the day I went to the hospital I went in a library first. I saw again a skeleton in front of me, I heard voices ringing in my head, I didn't know where I was, who I was, I didn't know what the people looking me were thinking. I had the feeling the ceiling would fall on me, the walls were closing on me and everything was distorted. I remember I couldn't breathe. It was horrible!

T: I believe it has been an unpleasant experience for you. In these past years after this incident have you ever thought about going to the library again?

K: Of course I have thought about it lots of times. But every time I considered the possibility I started to tremble, I turned red and I became so anxious that I gave up any thought about the library, let alone going there.

At that point I "joined the conversation professionally" and started to inform the client about the concept of total behavior. I kept the conversation on working with the component of thinking and activity.

T: What you have described until now is a good review of the fact that our total behavior is constituted of activity, thinking, feeling and physiology and that all the components are connected. You said that just thinking about the possibility of going back to the library made you feel unease. Your thoughts were reflected on your body. So I conclude that your thoughts about the library were negative. Is this correct?

K: It was full of fear. Meaning: what if I'll have hallucinations and I start to hear voices... what if I'll have to go again to Idrija, to the hospital...

T: It's exactly with the activity and view we choose that we can influence our state of health – our feelings. You mentioned the fear, which could have been feelings of weakness, sadness... to sum up feelings. And you mentioned the shakes, blushes... this kind of symptoms is a reflection of our thinking and activity on our body.

K: I agree with what you said. I have already noticed several times that some thoughts can upset me, like the fact with the library, my mother's attitude, my sister-in-law... Then I have to start thinking about something else or amuse myself with something else. Most of the times I start watching TV and I quickly forget about unpleasant things.

T: So you have some experiences with choosing your activities and thoughts by yourself.

K: I don't know if I'm the one choosing them.

T: You said that you interrupt the negative thoughts, followed by a bad feeling because of our total behavior, with a defined activity – watching television.

K: Yes, that's true, but I don't know if I start to think about it consciously. I certainly don't want to, because it makes me upset. It seems to me that these thoughts just emerge.

T: Let's analyze your deliberation about your resumed visit to the library. You said that this kind of thoughts were full of fear till now. You also said that you don't want to be upset again, but in order to feel well you need a positive and encouraging thinking. Can you think right now with me of the library in another way, a positive one?

K: You mean in the sense I can do that, everything will be fine...

T: That's what I mean, yes. You started good.

K: So, I can do that, everything will be fine, I haven't had any hallucination and I haven't heard things in years, I take my medicine regularly, so why would that happen exactly in the library, now I have also a psychiatrist and a psychotherapist to help me, the counselor of the group I am included could go with me. Everything may not be as bad as I picture it, I could even enjoy being there surrounded by books...

T: How much do you believe in what you just said?

K: The phrases at the beginning - everything is o.k. etc. I don't believe in them. Then I started to believe more and more that I could really do it. I mean, this way I could certainly do it. But I don't know what would happen when I'd really find myself in that situation. Now I felt at peace.

T: Did you notice that during your deliberation you have already started to plan the realization of the visit?

K: You are right, yes. You mean the fact with the counselor, right?

T: Yes. Is this realizable?

K: Of course it is. The counselors are at our disposal for cases like that.

T: Would you consider the option of asking the counselor to accompany you?

K: I'd like her to go with me, at least the first time. She could also help me search for books among the bookshelves. It would be easier for me.

T: You'll probably regain much with the visit at the library regarding your love for the books.

K: Yes, this is my big wish. I'm sure I would discover a new world. Maybe I'd feel a little more like myself. This would be something of mine.

The client needed support and encouragement for the visit at the library, but I tried to avoid any pressure or constraint. I also didn't lead the conversation to a formation of a concrete realization plan, because I trusted her and believed that she can accomplish this goal alone. The decision of going to the library (alone, or with the counselor) was left to her. This way, the client received the message that she is respected and her wishes are being considerate, that she doesn't have to do something if she doesn't want to and that she has the right to go to the library when she'll think it's an appropriate time. It appeared to me that the doubt about "an appropriate time" is superfluous – certainly there have been some of these moments and they never came to a realization. That's because she identified reading books as a "picture" in her quality world and she can use it to satisfy her psychological needs.

In the meetings that followed I got do know other figures of Ela's quality world that she used to successfully satisfy her needs in the past. When she talked about the kids at school and the time she spent in a village near Nova Gorica, her face became serene and relaxed.

She said that her work meant everything to her. It was proved to be true when she started satisfying her needs in a destructive and painful way after losing her job (everything).

T: I think that you're managing your life much better that you did in the past. What do you think?

K: That's true. I feel a lot better and my thoughts are not as dark as they used to be. I usually get the feeling that I've never done so much in my life for myself as now.

T: Maybe this is the right time for a new step. I don't know, you tell me. We talked about the fact of you starting again to transmit knowledge to the children and I remember you said that you would like to feel better. Now you know that our total behavior doesn't work that way - just to say yourself: 'I have to feel better', but it's the chosen activity that helps us feel better. Are you ready to do something with your wish – transmitting knowledge to others?

K: I've wanted that for a long time, it's true. I think that if I'd do that again I'd like to teach English.

T: I was thinking of lectureship and translation, too, but I think teaching is a better choice. It could help you start new relationships. Your knowledge is precious and there are a lot of children that have problems studying English.

K: English is one of the most difficult subjects, in the elementary school too. As for the lectureship and translation, I wouldn't do that because I don't have any experience with that.

T: I understand. So you'd try teaching, would you?

K: Yes, I think there's a need of teachers and the job is well paid, so I could improve my pension.

T: Yes, great. Do you have any idea how to offer your services, how to get students?

K: My brother is a teacher, so he could recommend me. He used to ask me if I'd teach someone, but I've always turned him down.

T: Are you ready for this new experience? Do you have any doubt about this and would you like to talk about it?

K: I think I should start with one student, not more.

T: As you wish. It's your choice and your decision. We'll keep have meetings, so if you'd want to talk about anything, there wouldn't be a problem.

K: This helps me a lot. I feel a little agitated, but it's not the same type of agitation that makes me feel bad, I'm fine now. I started to think about the arrangements and a place where to teach, there are some things that need to be finalized.

T: Would you like to talk about something, to think about it together?

K: Not really. I'm coming to conclusions regularly and there hasn't been any major problem. I'm glad, I feel enraptured again and I'm feeling well.

Soon, she started giving lessons, which turned out to be a good choice for a new behavior, because this job makes her feel successful. She's aware of the fact that she's a good teacher and so she's satisfying successfully her needs of strength, also freedom (she's the one deciding how many students she'll have and when) and amusement (she's renewing her old knowledge and learning new things). At the end of the consultancy she had two children and she was happy with that. She's got close with the mother of a girl she's teaching (they exchange gifts for holidays and birthdays, they go out together), she's working hard for new relationships.

I expected that as a many years teacher she's familiar with the psychology of external control (she also said that she mostly used anger with the children on "good purpose") and that these new relationships with her students would be better with the help of her new knowledge from the choice theory.

Through advisory process, she was gaining more and more control over her life. The two of us were close enough, so I could start a conversation about new relationships.

I'm presenting a part of our conversation about partnership.

…

K: I dated my last boyfriend for 8 years. We didn't live together; we were just seeing each other. He has been violent towards me just once. It has been pretty bad; I have avoided people for some time. I haven't told my mum at all, because it would have hurt her too much.

T: Did you ask for help?

K: No, I was too ashamed. Actually, I haven't told anyone.

T: How do you live with that?

K: I have locked it somewhere inside of me, like it didn't happen. But after that I've been more careful with men.

T: What are your relations with men these days?

K: Pretty reserved. Actually, I don't want to be with anyone.

T: Why's that?

K: Because I have a plastic bag (she had an intestinal operation). I had a correspondence with an Englishman named John and when he asked to meet

me I wrote him back: "Now I've got a plastic bag and I don't want to write you letters again". He wrote back: "What about the plastic bag?" I didn't answer him. We have been writing to each other for 10 years, I wrote him poems, I recorded my letters on tapes and he commented on my English. But when he asked to meet me, the correspondence stopped. When I got that message I didn't want to have any contact with him again.

T: I think his answer meant more something like, what should this mean to me?! So he accepts it and nothing has changed for him.

K: I think that too, but I keep imagining what would his reaction be when he'd see me. I don't want anyone to feel sorry for me.

T: We don't know what other people would do. We just know what would our actions be and we can just assume for the others. What would you do if he had a stoma? Would you accept that?

K: It's difficult to say, I don't know, probably I'd accept it.

T: What would you lose if you have taken a risk and continue you relationship with John?

K: I'd have lost my dignity. His rejection would have humiliated me.

T: This can be bad. Would this be the worst that could have happened?

K: Yes, this would have been the worst for me.

T: Would this had been worse that loosing the relationship and as a matter of fact you don't even know if it was really necessary?

K: Obviously I was afraid that his words would just confirm what I already knew – that I look awful with the bag. Believe me, it's terrible to see.

T: Yes, I understand that the bag is something bad for you and that you didn't want to risk showing it to someone. I don't have any experience with that and so I can't know what I would be feeling, but I had some scars on my belly and I was "torturing" myself with the question if my partner would accept me. But this was my problem really, not his. He was showing some compassion for me, because of my bad experience, but that's all. My sewed belly has never been a problem and our sexuality wasn't less beautiful. But it was me who had to change my perspective. Maybe these thoughts will help you. I also know that in a loving relationship this kind of things becomes insignificant. To stay in the context, I'd like to know if you still want a loving and intimate relationship, but you're too afraid or you don't even want it?

K: It's difficult, because after the operation I decided to remain alone and I really don't have any wish for a man. No offence, it has nothing to do with you, but I don't want to talk about it, because I wouldn't change my mind.

T: You have the right to make that choice. I suggest that if you'll ever want to talk about it with me, you'll just tell me. Would that be o.k. for you?

K: I agree, it's easier now that we settled that, because I don't want to talk about it.

At this point, the client has exposed her dysfunctional belief (her perception what a man-woman relation should be) which makes it impossible for her to have such new relationships at the moment.

During the counseling process I passed her the knowledge of the choice theory, I informed her about some literature that we talked about, and about good relationships for the sake of her mental health. She "equipped" herself with some new knowledge from the choice theory and someday she maybe will get close to someone in a relationship and satisfy her needs more successfully.

This is the third year Ela's coming to me for consultations, in the last year there has been only some occasional conversations – when she knows her

creative system is working again in a destructive way and she needs help to gain control over her life – but she still sticks to the idea of not having any relationships, even that she doesn't need them.

The fact, that in this time the client has developed other relationships with which she can satisfy her physical needs, is very positive. About the unsatisfying relationship with her brother and his wife, she decided to establish a relationship with her nephew (at the end of the scholar year she gave him a book with a dedication, all three together (she, her brother and her nephew) went to the cemetery to visit, commemorate the grandparents and spent a afternoon in summer by the river Soča. She expressed her satisfaction and she thinks that's more than she hoped for. She considered getting in touch with her nephew more often, because she saw that he accepted her.

Our relationship can also represent for her some sort of satisfying relationship. We talked about that. In this relationship she has with me, she can satisfy some psychological needs (I mean especially the need for acceptance, appurtenance, and partially the need of strength and amusement) and it helps her keep control of her life. I think it was because of this relationship that I was able to manage this therapeutic process, because she was coming regularly to the therapy and she participated actively to the process, in spite of the fact that I didn't "succumb" to the attempt of the controlling with the symptoms.

Through the therapeutic process, it was visible in what terms she sees herself. Her beliefs about herself were information of her lack of self-confidence, of confidence in her abilities, unacceptability, not appreciating herself as she is, inequality in relationships with others, etc. That's why we worked even with the basic relationship, the relationship with oneself. Ela talked about memories of her mom, who always said she could have done better when she came home with a good note, despite the excellent results. "You can always do better", that was one of Ela's beliefs that made a pressure in her. To be the best, to be perfect… this is the burden she's still carrying within herself. We are still working on self-kindness, on an

understanding attitude towards herself, when she doesn't succeed in something and when she's not "the best". It seems that the most difficult thing for Ela in changing her attitude towards herself.

Otherwise, in all the years we've been having these consultations she's done so much for herself. Every day she takes an hour walk, regardless the weather and her condition. Once a week she goes to the water gymnastic. She takes part in the group's activities (especially the marches and occasionally trips). In the summer she spends most of the days at the city pool with her colleagues from group for mental health. She started to read a lot again, to teach… Through the therapeutic process she replaced her reorganized creativity – the insanity with a new and simple organized behavior and so she regained her control. But in the following therapy she should change her position of being a victim of her "bag", in order to enter in an intimate relationship. The position of a victim makes it impossible for her to make a choice and this leads to a poor possibility of satisfying her needs of freedom in intimacy.

Conclusion

The case study shows us the client's story and her interpretation of the problems, the therapist's understanding of the client's problems with the help of the choice theory's concepts, a summary of the conversation's parts that are very important to establish a relationship, to discover the client's world of qualities, to understand the client's efforts, to shift the client from the conviction of the external control's psychology to the choice theory's conviction. The case study is an explicit demonstration of the establishment and development of the relation therapist-client in the sense of the therapeutic means for achieving the purpose. It demonstrates the improvement of the mental health by studying the choice theory and this contributes significantly to the individual's autonomy, to the indispensable independence of the therapist. The client builds more appropriate relationships with other people, changes her beliefs and chooses new activities, and so, she satisfies her needs and attain her life contentment in a better way than before.

The reorganization of behavior [6]- the phenomenon of mental health problems and other forms of destructive physiology (autoimmune and other psychosomatic illnesses) – the choice theory substantiates it with the use and/or participation of the external control. Besides the choice theory, which distinguish itself from the neo-behaviorism with the theological explanation of the human personality, the biologically perceptional control theory of William T. Powers (2005) with a systematic-cybernetic model also explains the behavior of living organisms with natural technology. Powers, understanding the human behavior, has defined, based on the experiments of second class cybernetics[7], the variables that a person can control. To supervise, to control does not mean responding to stimulus like it's described in the theory of behaviorism, which pushes between the stimulus and the reaction also the processes in the organism and by doing so it explains the differences in people's behavior. The control theory and choice theory explain the blank in the causal-consecutive reaction with the human beings expedience behavior. This way, the stimulus does not determine the behavior, it merely mediates the information (in the reality therapy – where and how to satisfy the basic needs), but it cannot define the choice of behavior (considering the total behavior neither the feelings and physiological processes) or other ways of constraint. In an individual's autonomy the behavior is in line with the purpose that he wants to attain. The action outside the organism it is not a stimulus that causes the organism's reactions, but a disorder[8], controlled by the organism. That is why the theory of internal control, in opposition to the theory of external control, defends the statement that a person chooses willfully his more complex behavior connected with the system of values (images in his world

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[6] The choice theory treats the mental health problems as behavior problems and not as a mental disorder or illness.

[7] The second class cybernetics studies systems that study other systems, while the first class cybernetics studies the human relation with the system, but it doesn't originate from the phenomenological perspective of understanding the systematic theory of oneself.

[8] The disorders are represented by the discordance between the perception of reality and the desired state of the organism.

of qualities). Regarding the theory of internal control, the symptomatic behavior is not caused by pathological organic changes, but basically it is the client's unhappiness that manifests through the chosen symptomatology. This unhappiness is perceived as loneliness, absence of relationships or life with unsatisfying relationships.

In the case, that the client cannot find the right choice with the thinking or active component of behavior with which he would be able to satisfy the basic needs more effectively, his creative system offers solutions with different emotional and physiological behaviors (symptoms). The choice theory teaches us that symptomatic behaviors are merely additional attempts of the organism to lower the frustration. The therapeutic process in the reality therapy means a self-estimation of the disharmony between the client's words and her actions, a self-estimation of the connection between her actions and their consequences, (self-)estimation, (self-)examining of the client with the therapist's support, how her convictions and her actions prove to be effective in practice in relationships, in which she lives, judgment and self-judgment of not knowing new and different ways of behavior that the choice theory offers. The help process is orientated to learn how to substitute the external control psychology by using the more effective choice theory. In the reality therapy the responsibility is clearly delineated and it's not identified by other's actions, but by what we are prepared to do by ourselves within our roles, to approach, to offer as much choices as possible. The choice is made by the individual autonomously and so he is responsible for it. In this context he is also responsible for taking over once again the control over his life.

Regarding the 'curative' theory, the reality therapy with a constructivist and systematic theoretical background certainly does not have an universal method of guiding the therapeutic process, but it originates from a defined structure that is based on an authentic relationship between the therapist and the client (Rogers, 1995: 263-264). During the conversation, the therapist redirects the client's attention from the past to the present, from others to himself, from the circumstances to his behavior, from the emotions and physiology to the actions and thinking, to the two behavior components

that we control directly – in the direction of changing what he wants and/or changing what he does (actual total behavior).

References:

Glasser, W. (1998). Teorija izbire. Radovljica: TOP, Regionalni izobraževalni center.

Glasser, W. (2007). Kako vzpostaviti učinkovit nadzor nad svojim življenjem: teorija nadzora. Ljubljana: samozaložba A. Urbančič.

Lojk, L. (1999). Znanstvena utemeljenost realitetne terapije. V: Svet kakovosti, letnik 5, št. 1, str. 15-24.

Lojk, L. (2002). Razmejitev realitetne terapije od drugih terapij: podobnosti in razlike. V: Svet kakovosti, letnik 8, št. 1, str. 9-18.

Powers, W. T. (2005). Behavior: The control of perception. New Canaan: Benchmark Publications.

Rogers, C. R. (1995). On becoming a Person: A Therapist's View of Psychotherapy. Boston, New York: Houghton Mifflin Company.

Wubbolding, R. E. (1988). Using reality therapy. New York: Harper & Row.

Inside the Dark Forest of Innovation Scoreboards

Dolores Modic
Varsi, Ltd. And School of Advanced Social Studies in Nova Gorica, Slovenia
dollymod@gmail.com

Abstract: *The "innovation mantra" seems to be today omnipresent and it seems the development (especially in terms of their abundance) of innovation scoreboards goes hand in hand with it. Inside the paper we are striving to comprehensively lay out some of the more important scoreboards and point out some general problems associated with them. Next we focus on some anomalies inside the results of the analysed innovation scoreboards, trying to put together a case for a more case-based approach; both when looking at the innovation scoreboards and when interpreting their results. Lastly, we delve on some policy implications, which can be drawled from the current use of innovation scoreboards.*

Keywords: innovation scoreboards, innovation indicators, case-base approach

Flying above the forest: some initial notes on innovation scoreboards

Today it seems the »innovation mantra« is ever-present; and the development of innovation indicators and innovation scoreboards has been made parallel to this.

Briefly looking at the historical view of the innovation data collection, we may see that the first attempts to structure a formal guide for gathering R&D data can be dated to the 60's. This led to the first Frascati Manual in 1976 (Frascati Manual, 2002). The Oslo Manual, which deals specifically with collecting and interpreting innovation data, is however much younger (1992) – thus coherent methodological guidelines for innovation data being available from the 1990's forward. Since then several developments have been seen (from a more non-technological orientation etc (for more see Adam & Modic, 2012)). However most importantly for us in this context, there has been a direction toward the development of (internationally) comparable indicators - to compare the performance of individual countries or regions (Freeman & Soete, 2007; Smith, 2006; Fagerberg, 2006), including the making international scoreboards and country comparisons (for more about their historical development also see Rossi, 2002; Smith, 2006; Grupp & Mogee, 2004).

Thus today there is an abundance of innovation scoreboards (and reports); which could be divided by different criteria, from those with different levels of geographical coverage (countries/regions), those which are designated by Adam & Modic (2012) as innovation scoreboards (or surveys - as some use the term as well (see for e.g. Godin, 2011)) in broader sense to those in narrower sense[9].

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[9] The first are those dealing specifically with innovation and the second those that deal with wider topics such as competitiveness but partly also dedicate themselves to innovation. Here we follow the notion by Saltelli et al. (2011) that the sets of challenges facing the measurement of both innovation and competitiveness are very similar, if not practically identical; similarly was done in Adam & Modic (2012).

Table 1: Overview of some existing scoreboards by different criteria

Geographical coverage	
Regions	Countries
Regional Innovation Scoreboard	Innovation Union Scoreboard
Lazio Region Innovation Scoreboard	Global Innovation Index (GII)
IPRIA Innovation Report[1]	CISCO Reports
BCG Innovation Report (BCG) 2010	BCG Innovation Report (BCG) 2009
US Index of the Massachusetts Innovation Economy	IPRIA Innovation Report
	Global Innovation Scoreboard (GIS)
Indiana Business Research Centre Innovation Index	Global Innovation Policy Index
Narrower and broader innovation scoreboards	
Narrower	Broader
Innovation Union Scoreboard	Global Competitiveness Report (GCR)
Global Innovation Index (GII)	World Competitiveness Yearbook (WCY)
CISCO Reports	Union Innovation Competitiveness Report (UICR)
BCG Innovation Report (BCG)	
IPRIA Innovation Report	
Global Innovation Scoreboard (GIS)	
Global Innovation Policy Index	
Regional Innovation Scoreboard	
Lazio Region Innovation Scoreboard	
IPRIA Innovation Scoreboard[1]	
US Index of the Massachusetts Innovation Economy	

Indiana Business Research Centre Innovation Index	

The selected innovation scoreboards mostly provide a composite innovation index, which is the base for country rankings. Therein the scoreboards contain a varying set of indicators: there are scoreboards that take relatively few indicators into account – such as the CISCO; on the other hand, the others take into account a large number of indicators - such as the GII.

In general scoreboards can serve for monitoring and evaluation of dimensions and general innovation performance of countries – or other territorial units - and some give them policy significance i.e. as a basis for directing innovation policies. Furthermore they may be used as well to assess the innovation performance of countries in relation to other countries - i.e. for the so-called innovation benchmarking (Hollanders, 2009; Jakl et al, 2009; Arundel, 2007; Arundel & Tarantola, 2008; Scerri, 2006; Foyn 2006).

Running through the woods: selected international scoreboards at a glance

For the continuation the regional innovation scoreboards are missing and only those comparing countries are considered[10].

Table: Tabular overview of innovation scoreboards

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[10] Besides the regional innovation scoreboards, also two important innovation reports are missing from this overview; first is the UICR and second the OECD STI Outlook. Both were not considered here due to the fact they do not rank countries, since in the second part of the paper we looking specifically at them. Also we are not taking into account some older scoreboards such as The Technology Achievement Index (TAI, 2001). However we would, for further analysis, recommend two more recent reports dealing with similar topics: the so-called CANA dataset (Castellacci & Natera, 2010) and the Global Innovation Policy Index (Atkinson et al, 2012).

Scoreboard	Last available [1]	No of indicators	Scoreboard focus	Geographical coverage
Innovation Union Scoreboard (IUS)	2011	24 (25)	Innovation performance	27 (EU27) + 7 (non-EU)
Global Innovation Index (GII)	2012	84	Innovation performance	141
CISCO Reports	2009	1[2]	Innovation performance	82
BCG Innovation Report (BCG)	2009[3]	24	Innovation performance	110 + 50 federal states (USA)
IPRIA Innovation Report	2009	10	Innovation performance	29
Global Innovation Scoreboard (GIS)	2008	9	Innovation performance	47
Global Competitiveness Report (GCR)	2011-2012	117	Competitiveness	139
World Competitiveness Yearbook (WCY)	2011	327	Competitiveness	59

Legend: [1]Figures are based on the latest available report, where not especially indicated differently; [2] the CISCO actually envelops more indicators, but treats them as additional only; [3] the report for 2010 focuses on U.S. federal states.

The Innovation Union Scoreboard (previously named European Innovation Scoreboard (EIS)) is a yearly published scoreboard by the Maastricht Economic and Social Research and Training Centre on Innovation and

Technology (MERIT). The Innovation Union Scoreboard (IUS) is based on a three-pillar concept: a) the enablers include elements of innovation support external to companies themselves; b) the firm activity pillar, which seeks to capture the innovation efforts of companies themselves; and c) the output pillar, which seeks to present the results (that is the effects) of companies' innovation activities. The model itself includes 25 indicators, however currently the IUS is capturing only 24 indicators[11]. The IUS also contains a general composite indicator called the SII. To calculate it, equal weights for all indicators are used. The IUS is thus one of the scoreboards in narrower sense, which is ranking countries (mostly EU27 countries, however also seven other countries) according to their SII scores, however it is additionally clustering them in four different groups: innovation leaders, innovation followers, moderate innovators and modest innovators.

The Global Innovation Index (GII) is published by the INSEAD Business School (and from 2012 on together with the World Intellectual Property Organisation (WIPO); the latest edition is being the fifth. The GII contains 84 (80 for 2011) for 141 countries for 2012 (the GII 2011 however had enveloped 125 countries - thus they are steadily increasing the number of countries inside the report), with (in general) equal weighting being applied to them. The model combines so-called objective data (from various public and private databases) with subjective data (from the annual Executive Opinion Survey World Economic Forum). It distinguishes between enablers and outputs. The large number of indicators are however divided into different pillars and sub-pillars to allow a better overview. The GII also provides a so-called innovation efficiency index.

The Economist Intelligence Unit (EIU) has issued two innovation reports; we call them the CISCO reports. The first came out in 2007 and the second (with a slightly altered methodology) in 2009. The reports compare 82 countries. CISCO's most interesting feature is perhaps the fact that innovation output is measured by the sum of EPO, JPO and USPTO patents (as a five-year

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[11] Missing is one of the indicators inside the dimension of Innovators: the High-growth innovative firms.

average) [12], which we consider a better choice than the (typical) use of triad patents (where all three applications must be simultaneously present). What is presented in the first instance as an innovation index is actually an innovation performance index; namely, an index dependant exclusively on the sole output (patent) indicator. Furthermore the innovation enablers only accompany the outputs (whereby direct inputs are being weighted with 0.75 and the innovation environment with 0.25).

The BCG Innovation Report is published by the Boston Consulting Group together with the Manufacturing Institute and the National Association of Manufacturers. The report for 2009 presents innovation indicators for 110 countries plus 50 American federal states, whereas the 2010 report is focused on American federal states only. The indicators are divided into innovation inputs and innovation efficiency indicators. The report provides a composite innovation index, for which we later see is actually an output index; however the report remains practically silent on the construction of the indexes for countries (although a very general model is presented) and we find scarce information concerning where the data was gathered from.

The Intellectual Property Research Institute of Australia report (the IPRIA report) primarily highlights Australia's innovation performance, although it contains scores for 29 selected OECD countries in the second part of the report. The report includes a time series for its innovation index from 1973 to 2008. In general, the IPRIA Innovation Report (2009) - which is based on the Porter-Stern (Porter & Stern, 2001; Porter et al, 2002) approach; whereby indicators weights are derived from regression analysis relating to the development of new-to-the-world technologies (in other words, to international patenting) and to drivers of national innovative capacity (IPRIA 2009: 3,22). IPRIA contains four pillars: innovation output (1 indicator), quality of common innovation infrastructure (6 indicators), cluster-specific innovation environment (2 indicators), and quality of

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[12] If we consider this indicator, we must note the position of Japan at the first rank - whose maximum value has been set at 800 patents per million inhabitants (otherwise Japan would reach 1,200 patents per million inhabitants) – due also to the construction of this measurement.

linkages (1 indicator). Here the primary measure of innovative output employed in the index is international patent output[13].

The Global Innovation Scoreboard 2008 (hereinafter: GIS) explores the innovation performance of the EU-27 countries and 20 other countries (among them major R&D spenders in the world). The GIS 2008 methodology includes nine indicators of innovation and technological capabilities grouped in three main dimensions (pillars): Firm activities and Outputs (2 indicators), Human Resources (4 indicators) and Infrastructures and Absorptive Capacity (3 indicators). Similarly to the IUS, it divides countries into groups. Interestingly, in comparison to the IUS it does not have an equal weights system, but a strong emphasis is given to the first dimension of firm activities and outputs (40%). The GIS index 2008 is calculated relative to two different years – 1995 and 2005 – thus also allowing a time comparison.

The World Competitiveness Yearbook (WCY) has been published by the IMD World Competitiveness Centre since 1989, making it one of the scoreboards with more tradition. The report for 2011 sets out rankings for 59 countries, the same is indicated also in the recent issued results for 2012. The WCY contains more than 300 indicators, although not all of them are used in the calculation of the global competitiveness index (the GCI). The model contains four pillars with different weights, which are further divided into 20 sub-factors. Yet each of the sub-factors has, regardless of the number of indicators it contains, the same weight in the consolidation of the results: 5% (meaning 20 sub-factors weighted with 5% = 100%). The data are gathered from the Institute for Development (IMD) Executive Opinion Survey (Survey Data); also included is data from other sources (Hard Data) as well as the so-called Background Data. The publicly available data on the

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[13] The data are provided by the United States Patent and Trademark Office. For all countries except the USA, the number of patents is defined as the number of patents granted in the USA (we believe this is hardly the optimal indicator, due to the home advantage considerations and also different propensities to patent in the USA by applicants from different countries) However, they believe that since nearly all US-filed patents by foreign companies are also patented in the country of origin international patents should provide a useful metric of a country's commercially significant international patenting activity (IPRIA 2009).

methodology used is however scarce, which also tells us that it is a more commercially directed innovation survey.

The Global Competitiveness Report is issued by the World Economic Forum in Geneva. The dominant source of the data is the World Economic Forum (WEF) Executive Opinion Survey, although especially other quantitative data can be traced to various databases. The GCR has 12 pillars for which different weights are applied and they also contain different numbers of (inferior) categories and indicators. The pillars themselves are however divided into three groups: basic indicators, enablers and indicators of innovation and sophistication. A special weighting system is present here (none of the other scoreboards apply such a system); it is based on the assumption that different factors will be more or less important for differently developed economies. Thus, the countries are divided into so-called factor-driven, efficiency-driven and innovation-driven; then different weights are applied (for example, for Slovenia the pillar of innovation has a ponder of 20%).

Looking at the trees: some general remarks on the problems of innovation scoreboards

As we can see above a wide variety of scoreboards is today present (whereby our list is far from being extensive). In general the construction of innovation surveys reminds us of a »never ending« story. The thesis lurking in the background of this contribution is that there is no »perfect« way to construct them, nor is there an all reaching »assortment« of indicators that should be included; however that some more thought should be given to the construction of the innovation scoreboards and also to the interpretation of the results.

Looking at the existing criticism, we may see that the majority is directed towards the European Innovation Scoreboard as the Innovation Union Scoreboard predecessor; however some criticism is also directed towards other innovation scoreboards. The criticism is directed especially towards:

the lack of a clear theoretical model (see e.g. Schibany et al. 2007, Schibany & Streicher 2008, Rammer 2005 in Hollanders & van Cruysen 2008, Grupp & Mogee 2004, Tijssen 2003); the selection criteria for indicators (e.g. Sajeva et al. 2005, Schibany & Streicher 2008a, Schibany et al. 2007); criticism of individual indicators (e.g. Grupp & Mogee 2004, Rammer 2005 in Hollanders & van Cruysen 2008, Sajeva et al. 2005; Smith 2006, Evertsen, 2008; Hollanders & van Cruysen 2008, Foyn 2006, Mairesse & Mohnen 2010); their high correlation or high volatility (e.g. Streicher et al. 2007; Hollanders & van Cruysen 2008); the dependence of the end rankings on the availability of indicators (e.g. Mairesse & Mohnen 2010, Schibany & Streicher 2008a, Schibany et al. 2007, Grupp & Mogee 2004); the quality of the data (e.g. Schibany & Streicher 2008a, 2008b, 2008c) and the criticism of composite innovation indexes (e.g. Grupp & Mogee 2004, Schubert 2006; Mairesse & Mohnen 2010, Schibany & Streicher 2008a; 2008b, Schibany et al. 2007; Schibany et al. 2007, Mascherini, 2008, Archibugi et al. 2009, Grupp & Schubert 2010); and the so-called "time sickness" of innovation scoreboards (Jakl et al., 2009, Hollanders & van Cruysen 2008, Schibany & Streicher 2008a, 2008c, Grupp & Mogee 2010)[14]. As we will see the majority of criticism (for more on these criticism consult also Adam & Modic, 2012), regardless of the fact that it was mostly directed towards the EIS, may be applied to other scoreboards as well, as we will see below on some examples.

Thus we may start off with saying that the scoreboards seem to suffer from numerous deficiencies[15], however let us try to be more concrete. Perhaps the story of the BCG report giving us the least transparent and thereby problematic story. The around 30-page long report, contains practically no

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[14] Describing the situation where the results of the scoreboards is outdated since they use (in average) data that is a couple of years old.

[15] Taking these into consideration also all the other problems issues like different indicators descriptions within the innovation reports and the associated methodological reports (CISCO 2007, 2009) and incorrect or missing tables (for example even the new IUS 2011 is not immune to it; if one looks at Table 2 on page 13 one could see wrongly listed countries in the category of moderate growers (for innovation followers, moderate innovators as well as modest innovators) are hardly worth to mention.

data on indicators; let alone on the sources of indicator values. No matter what indicators the scoreboards decide to use, *ad minimum* we should always be able to construct the background of the data and the results as a whole and should be made aware of the possible deficiencies of the used variables and methodology.

The reasons given for the inclusion of the indicators is usually bleak to say the least; though some, such as the GII are in recent years putting a lot of additional data inside their reports both on indicators as well as methodology. For example it has also enlisted the help of The Joint Research Centre (JRC) of the European Commission to support the research to ensure the overall conceptual and statistical coherence of the GII framework (which is necessary since it has around 80 (!) indicators; or in other words more than three times more (!) than the IUS), and performs a robustness and sensitivity analysis of the final rankings. But for 2011 although it has been noted that some indicators have very high correlation; however they have still (!) remained inside the scoreboard[16]; on the other hand we must note that some changes have been made inside the GII 2012 (giving some indicators 0,5 weights or putting them together in a single indicator). Here we could see that they have not decided to simply eliminate some of the indicators. However, considering the already vast number of indicators used by the GII we do not support the retained indicators, since one could hardly find any justification to do so). Still a feed-back loop has been established, which we deem as positive[17].

Sometimes we stumble across unusual choices for indicators where we would not expect them. Despite the fact we could in general point out some advantages of the IPRIA scoreboard, however some indicator choices remain disputative in our opinion, since we believe they do not measure the

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[16] Let see some examples: despite a very high Pearson coefficient (more than 0.92), the model retains indicators such as "The rule of law" and "Quality of legislation", "ICT access" and "ICT use", "R & D expenditure of companies" and "Implementation of R & D activities by companies".

[17] For instance we could not claim the same in regard to the IUS and the subsequent Trend charts that are made (separately) for the countries, or in regard to their calculations of Pearson's' coefficients.

underlying feature. We are here pointing out the indicator for the quality of linkages, since they use the percentage of R&D Performed by Universities, measured by the percentage of R&D expenditures. It is for us unclear; in what capacity the R&D expenditures would tell us the story of linkages, let alone of the quality of those linkages? Thus we believe the proxy to be inadequate.

The scoreboards usually divide the indicators into different dimensions or pillars and those with a lot of indicators then in the lower categories (sub-pillars, sub-dimensions). However these are some time a bit misleading at the first glance. Let us here look at the so called pillar creative outputs and the sub-pillar of creative intangibles in the GCR (where for example for Slovenia a relatively high score may be noted), with indicators for trademarks, but on the other hand also the ICT indicators, where Slovenia is doing traditionally very well. Thus the high score has more to do with ICT indicators[18] then with more established innovation indicators, thus giving us "false hope" in terms of Slovenia.

Most of the scoreboards also calculate general composite indexes. If we look here at the issue of weighting (which is believed to be a prominent issue); most scoreboards let us to believe, that all indicators have equal effect on national innovation performance. Taking an example from the IUS; by giving the PCT patent application in societal challenges the same weight as the PCT patent application indicator or the indicator of R&D expenditures. Or if we take the example from the GII; the indicators inside the Knowledge workers sub-dimension; where the GERD performed by enterprises is valued equal as the formal training offered by firms (not that we would consider the latter as totally irrelevant, however an equal weights system is here however not suitable). However this equal weights system is also following a simple day to life logic, not credible. However we may see that not all scoreboards settle

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[18] Whereby there has been a while a strong tendency to eliminate the ICT related indicators, though here we must note that recently the GII has made a sub-pillar focused exclusively on so-called online creativity.

for a simple equal weighting as is the case of the IUS[19]. Most notably the example of IPRIA must be exposed (with its regression analysis based weighting). Interestingly we may also sometimes see the expression of general (composite) index in the end (miss)used, as it is (only) referring to the output indicator. For example looking at the CISCO, where all "hope" is put into a patent indicator they have constructed.

If we look for example at the GIS we might mention it is suffering from a severe case of "time sickness" (even the EIS report, which came out at the same time, has been quite more up to date). Interestingly the index is more business oriented, then for example the IUS with the pillar of firm activities and outputs weighting 40%. Also for example the GII has put the limit to practically more then 10 years old data to be used; and the IUS is depicting in general a two to three years old situation.

One could say, the innovation scoreboards seem to act as bureaucratic sets of data. It is generally felt that the scoreboards should generally seek a better balance between selecting only a few indicators, which may result in not fully reflecting the situation at a particular area, with the "over-stuffing" of indicators (for example GII with now 84 indicators, has actually had a trend of increasing (!) the number of indicators in recent years (the GII 2011 has had "only" 80 indicators). Moreover, the introduction of new indicators must be a deliberate act and in the case of some scoreboards, it seems that they sometimes show too much enthusiasm for "new" indicators, where we could for example use the example of the IUS (new) indicator of non-EU doctoral students[20].

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[19] Considerable concerns have been directed at how the composite index is calculated (Grupp & Mogee 2004, Schibany et al. 2007, Mascherini, 2008, Archibugi et al. 2009, Grupp & Schubert 2010) also due to the equal weighting system (Grupp & Mogee 2004, Schubert 2006). However the notion of Sajeva et al (2008) has currently prevailed in favour of using equal weighting system.

[20] Here we see four questions. Firstly, is it really an appropriate indicator to capture "the effective mean of spreading knowledge" or would perhaps an indicator such as the one of the mobility of researchers tell us more on this? Secondly; if we look at the principle of indicator equivalence, is it an indicator that actually has as big as an impact as the rest? Thirdly; if nothing else would it not be reasonable to look at all

The data inside the innovation scoreboards is gathered from variety of sources, among them the OECD and World Bank being the most usual ones (for the IUS, since comparing the European countries, this is "replaced" by mostly Eurostat data). For example the sources listed inside the GCR are extremely numerous - but let us here mention the "curious case" of the source for media freedom indicator. Here we find the most striking example of a source in all the analyzed scoreboards, since it lists Wikipedia as the source. If we would to take a closer look at the matter, we could see that the data comes from the Press Freedom Index. Why the original source, which is available with methodological notes included, is not used remains somewhat (though perhaps even "somewhat" is here an understatement) unclear[21]. Also some other unusual cases could be noted, such as the customs indicator (which is today inside EU27 (or for example CEMAC etc.) a rather obsolete indicator). The indicator values should (objectively) not show significant differences between countries that are within the same customs zone; however here the value of the indicator is obtained through a survey, which is, in our opinion, the cause of such differences.

Let us briefly focus on the surveys as well. We shall look at the fairly straightforward problem of the simple sample size; within the cases of CISCO and BCG surveys. The BCG survey was done on a complete sample of 1590 senior executives, yet if we look at the geographical distribution, we can see that in the "other" European countries accounted for 28 respondents (so even in the case of counting only the EU27 (minus the five countries which are counted separately), we get about 1.3 (!) respondent per country.

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doctoral students who are non-residents, because it is not clear why only the mobility of non-EU students would be important, since foreign doctoral students, who come from other EU countries represent the mobility of knowledge as well. Germany for example, accepts a large number of students from Poland, which has, generally speaking, a much greater potential for innovation that say, getting students from Algeria. Yet the indicator takes into account Algerian students in France; but not Polish students in Germany. Fourthly: is it, in the case of France and Algeria, truly that France benefits the most, or does Algeria perhaps benefit more?

[21] On top of everything additionally also the Freedom of the Press survey data with its methodological notes is also publicly available and that survey has been done for the past 30 years.

Similar can be observed in the case of the CISCO survey, which was conducted on a sample of 485 senior executives in Europe and the Middle East (56%), America (20%) and Asia-Pacific (20%). For each European country, this means an average of 10 respondents.

All of the scoreboards with longer tradition have been changed numerous times; indicators added or taken out of them or (substantially altered), making thus long-term comparisons difficult. Such an example is the change in the measurement of patent applications inside the IUS – that is the change from one to the other database coupled also with the change of the denominator (transition from EPO database (and the denominator per million inhabitants) to the PCT database (and the denominator of per billion GDP). Here the position of some countries has been significantly changed (for example that of Germany or that of Luxemburg), however a clear concept regarding these changes is many times missing. Because of the constant changes also the overall structure of innovation scoreboards could be described as getting fuzzier and fuzzier. In any case we, in this sense, do not follow the notion put forward by Sitanyi (2010:2) that "the method of comparing and analyzing them have been continuously developing, changing and *refining /authors emphasis/*".

Climbing the branches: on some anomalies in country rankings

We have started already in Adam & Modic (2012) to put together a strong argument in favour of a more cased-based approach when dealing with innovation scoreboards; there trough a contextual (cross-)country-based re-analysis of the Innovation Union Scoreboard. Of course the present section does not allow us (due to its broad scope of looking at various innovation scoreboards) such a detailed analysis as was done for the Innovation Union Scoreboard, however we hope that it shall suffice to point out the need for a different, more careful and in-depth approach when using innovation scoreboards data. Furthermore we hope, we may inspire future work to be done in this direction. Let us here also note that in general we follow the view that in general the results of innovations scoreboards are and are, as a

rule, consistent with real innovation performance of the countries (similarly as had been the view by Paas &, Poltimae 2012 or Adam & Modic, 2012 in regard to EIS-IUS). However, if we look at specific rankings in individual scoreboards, we may see, we can find some anomalies at a first glance practically in all of them[22]. We shall try to take an in-depth look at some selected anomalies in order to see what actually lies behind them.

Let us look first at innovation scoreboard in a broader sense. In the GCR we may see such anomalies as Vietnam being ranked higher then Slovakia or Botswana ranking above Croatia and Greece, not to mention if we would believe the GCR even Rwanda (!) is these days more competitive then Greece. Let us look at what has brought Rwanda (a country with GDP per capita (PPP) 1,163$ (World Bank, 2012) this "competitiveness age" over Greece (with its GDP more than 24 times (!) that of Rwanda)[23] ?

First let us note that Rwanda belongs to the group of factor driven economies (thus the weights of the dimensions being: basic requirements: efficiency enhancers: innovation and sophistication factors = 60% : 35% : 5%), whereas Greece is in the group of innovation driven economies (basic requirements: efficiency enhancers: innovation and sophistication factors = 20% : 50% : 30%). The scores for Rwanda in comparison to Greece are especially high in the pillars of institutions, macroeconomic environment, goods market efficiency, labor market efficiency, financial Market Development and (somewhat surprisingly) innovation. Above all the Labor market efficiency seems to be a definite strength for Rwanda, with practically all indicator scores being high (amazingly from the WEF Executive Opinion Survey, World Bank as well as the International Labor Organization databases). Looking at the pillar of institutions - where practically all of the indicators are based upon the WEF Executive Opinion

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[22] However let us note that such anomalies are not inherent only to innovation scoreboards. Let us here point out the MIT's Atlas of Economical Complexity (2011). For example we may see that inside the Atlas Slovenia is positioned at a very high 10th (!) rank, which means it is ranked above USA, France or Denmark (!); or for example Australia is being positioned behind countries like Georgia or Guatemala or Belarus (?!).

[23] Greece has a GDP of 28,406$ per capita (PPP) (World Bank, 2012).

Survey - it seems that there is a much more positive stance toward the issues of institutional competitiveness framework in Rwanda than in Greece (where a rather bleak picture is painted). The two interesting features are definitely also the pillar of macroeconomic environment and innovation, whereby let us note, these are also two of the pillars where Greece is doing also much worse than the average of innovation-driven economies. Again looking at the innovation pillar we may see the negative stance towards innovation issues in Greece, with the WEF Executive Opinion Survey indicators being decisively low (however the patent indicator is higher[24]). We do not doubt that Greece in these days is doing poorly both in terms of competitiveness as in terms of innovation; but is it really worse off than Rwanda?

Next, looking at the WCY where it seems Slovenia is doing very poorly and also (far) poorer than in other innovation scoreboards. Let us examine the available data on indicators values and try to determine especially what brought on the (sudden) fall in Slovenia rankings in 2010 (the fall from rank 32 in WCY 2009 to rank 52 on the WCY 2010). We may see that the fall of Slovenia on that innovation scoreboard has been however greatly influenced by the declining values of macroeconomic indicators, such as real GDP, deficit, FDI (of course also with a substantial decline in the values of indicators of the legal institutional framework and labor framework). Looking at the issue also trough the Slovenian results in the above mentioned GCR of especially those the legal institutional framework (especially those in the area of inefficient labor market etc.) and the financial market development (low levels of venture capital and availability of other capital etc.) are very low. Whereas (interestingly) the macro-economical pillar has stayed pretty much unchanged (however this is due to the high rankings for Inflation and Interest indicators (here one must however note,

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[24] Whereby we may see the GCR has here utilized the indicator of USPTO utility patents granted, which we would not recommend in any case. Firstly it is based only on one jurisdiction (that of the US Patent Office), bringing their different use by the nationals of different countries and bringing the national advantages. Secondly the tradition of the use of utility patents is in different countries differs greatly (for example Slovenian patent holders virtually do not use them).

that they are more the result of the activities of the European Central Bank, then Slovenia (!). Going back to the WCY and looking at the sub-pillar level there, we may see the next being most problematic (where Slovenia ranks worse than on rank 50): domestic economy, international investment, fiscal policy, productivity & efficiency, labor market, finance, management practices and attitudes & values. Also interesting is that the majority of the indicators showed for Slovenia as weaknesses have been extracted from the IMD survey (15 (!) out of 20), which is bringing us to wonder in what extend this decline may be contributed to the general dissatisfaction in Slovenia. One may on the WCY also see some other "interesting" anomalies. One has to have doubts when seeing apparently Kazakhstan is "doing better" than Hungary (not to mention Kazakhstan is also ranking higher as Czech Republic, Slovak Republic, Poland, Spain and of course also the above mentioned Slovenia).

Focusing now at the innovation scoreboards in a narrower sense the BCG is trying to tell us a story of a very innovation successful Ireland, even more successful then say Finland and the US (!). Among other interesting examples we may notice, in the IUS the highest ranking innovation follower Belgium is ranked behind Estonia, which is in the IUS the lowest ranking innovation follower. However, the BCG does not allow us a more detailed look into the reasons that are lying behind this. However we may see the same phenomenon in the GII 2011 (note here we are in this example not using the GII 2012 data, due to the fact of the report being just recently published and the data analyzer not yet allowing the comparison), where however the comparison is possible and we may examine how this has come to be. Comparing the two at the level of individual indicators, we may see some interesting instances. For example Belgium having poor results in some areas, we would not expect to see; such as indicators on venture capital/venture deals, joint ventures/strategic alliances, high tech export (and import), as well as national applications of intellectual property rights. Looking first at the venture capital we may see that IUS does not contain a score for Estonia, nor was it ever able to produce the result for it (neither before when using the Eurostat data, nor now using the EVCA data). So where does the GII score for venture capital deals come from then? The GII

indicator is apparently relying on various sources (listing the Thompson Reuters One Banker Private Equity as the prime one), showing Estonia reaching an (rather amazing) high 7th (!) rank out of all countries by depicting scores from 2010. And there is where it seems the "problem" lies; even looking at the values from the EVCA (2011) report (taking the relevant categories of early stage, expansion and replacement capital), we may see that usually Estonia would be showing much lower scores, however in 2010 it is reaching far higher scores then usually; comparing them to 2009, they are more than five times (!) higher. Belgium is however usually steadily ranked much higher (seeing for example both EVCA as well as Eurostat numbers from before). Secondly the FDI scores for both the FDI net outflows as well as inflows are for Belgium set at 0.00; as the only country showing such a score for this indicator (looking at the OECD indicators for Belgium, we may see that there is only one score present for Belgium is from 2007 set at the "absolute zero observation"; however no other score is present for any of the years (!)). The third are the national intellectual property rights indicators, which are for Estonia set higher then Belgium; however we must add here that it is highly unadvisable to use national data in international comparison, its futility seen also here in both looking at the Belgium-Estonia comparison; whereby looking at all international patent information (PCT, EPO, USPTO etc.) Belgium is reaching far higher scores then Estonia. The futility may also be depicted looking at the country rankings for this indicator value in the GII; for example with countries like Moldova, Mongolia, Georgia and Kyrgyzstan all reaching higher scores then say Finland (!). Let us here however mention that Belgium's ranking (together with UK ranking) is also worse in the IPRIA then its IUS ranking would have indicated, with ranks 15 for Belgium and 16 for UK. Or looking at it differently its first "north and south neighbours" on the IUS Finland and Netherlands have higher scores (Finland: Netherlands: Belgium: UK = 156,1 : 65,5: 56,6 : 54,4), however more details are not available.

On the example of the GIS let us look at the relatively solid position of the Russian federation, which is ranking just below Estonia (!) on rank 29 in the third group, where it has climbed to since 1995. Thereby it has even declined for two places when looking at the scores for 1995 (though

relatively to Estonia it stayed the same, since also Estonia dropped two places). Looking at the pillars we may see that its relative strength according to the GIS seems to be in the human resources dimension, whereby we may see from Figure 5, it is adding to its overall good ranking much more then it is usual for other countries (with the exception of Mexico, which is similar). Here no more in depth data is available, however for example from the IUS we may see that in comparison to the EU27 average, it is scoring far better in the tertiary education, however the question remains what is Russia truly able to "squeeze" out of its human capital? We must also note that Russia is in the same (third group) as above mentioned Estonia, but also Slovenia on one hand; but on the other hand we may find here also Lithuania (!). However the »looser« in comparison to the IUS (or before the EIS) is definitely also Cyprus. For example inside the EIS it has in 2009 climbed in the second group of innovation followers (whereas before it was in the third group, but with a fairly good standing), whereas inside the GIS it is placed into the last (!) group. This seems also to go hand in hand with the notion of its good position on the IUS being heavily influenced by the (in GIS not included) Community Innovation Scoreboard indicators (for more on this see also Adam & Modic, 2012).

The CISCO on the other hand shows us a rather weakly positioned Estonia, which is interestingly ranked behind the Czech Republic and even Croatia. If we compare this to the data the IUS 2011 Database is providing us (based on the IUS model) the indices for the three - we may see Estonia: Czech Republic: Croatia = 0,496: 0,436: 0,31. Estonia is thus (differently as the CISCO results would indicate) in the IUS in the group of innovation followers, whereas the Czech Republic is only a moderate innovator (the same is true for Croatia if we look at the broader comparison included in the IUS 2011 report). We could also see some other anomalies inside the CISCO such as South Africa apparently being more innovative then Slovakia or Poland (!). However here we must note the dependence of the CISCO index upon its patent indicator showing the average of EPO, USPTO and JPO patents per million inhabitants. Interestingly, would we depend on the (simple) triad patent counts from the OECD database (note that they are not available for Costa Rica), both Slovakia and Poland would be ranked above

South Africa, if we would calculate the numbers to the million inhabitants denominator: South Africa: Slovakia: Poland = 0,52: 0,722: 0,706); though generally we still do not recommend the use of triad patents, due to general problems related to them (low patent counts etc.). None the less, the example shows us, that the choice of the patent indicator is very important, even when we are indeed taking into account only international patents or some combination of regional and national patents.

Hitting the ground: why does it all matter?

Box & Draper (1987) have a bit ironically written, that »all models are wrong, some are just more useful then others«. Although not following this pessimistic view in full, however we believe that much more diligence is needed when trying to use and apply the results as are seen from the innovation scoreboards.

The underlying questions are thus here: a) how is an individual country doing in terms of innovation performance and b) how may it increase its innovation performance? In terms of the latter; one possibility seems to be straightforward: to increase the innovation inputs. However this is, also due to various restrictions (including also financial restrictions) usually not an easy task. Furthermore here also the questions of "optimal level" tend to arise (or as it is sometimes called the "more is better" concept). It is hardly efficient to keep increasing the inputs, if the added value of outputs is not (at least) matching it. The other way to increase the innovation performance is thus to increase the efficiency of innovation inputs or in other words to increase the efficiency of the innovation system[25].

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[25] If we take the example of Slovenia, we see for example that in the 2011 report Slovenia was ranked overall in 30th place, yet when looking only at the innovation efficiency score it drops to 46th place (in the year prior to that it was ranked in 72nd (!) place). Hence, innovation efficiency tells us a story of high enablers but low outcomes; in other words, it is not a story any successful innovation policy should strive for.

West & Bergstrom (2010 in Husband Faeling 2011) have noted "the worst thing a metric can do is not just to deliver a bad answer, it is to incentivize bad practice" or we may add, "or not to give incentive for some policy measures, where they should be following". For example looking at the change of ranking for Germany in recent three EIS-IUS report inside its patent indicator, one could see its decline; however one could see this decline was caused mostly by the changes in the patent measure and is thus more of a statistical mirage, then anything else. On the other hand, if we look at for example the ranking (and score) of say Guyana or Mongolia in the indicator of strategic alliances/joint ventures – whereby the indicators that depict the cooperation inside different innovation systems are based on the assumption that that cooperation increases scientific productivity (Hollanders & Tarantola, 2011: 7, 31) and technological output - we would be led to believe, that the cooperation inside their innovation systems is much better then for example in Finland[26] (which is according to the Community Innovation Survey indicator on innovation co-operation one of the best scoring EU country); and thus no policy measures would seem to be needed. However one must be reluctant to follow such an assumption[27].

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[26] The indicator score is reaching the value of 100 for Guyana and Mongolia and 39, 66 for Finland. Here let us note, that the indicator itself is also problematic. The data is gathered according to GII (2012), from various sources, the dominant being Thomson Reuters data on joint ventures / strategic alliances. However even this one has a mere 3.000 venture deals enlisted; but the GII has been able to get scores for 112 countries in total; however the data is highly asymmetric; with the lowest (but still positive) scoring Algeria reaching a mere 0,96 and the lowest ranking EU-27 country (which is actually Slovakia) reaching 1,87.

[27] Here also note that some indicators inside the scoreboards there can only be affected in the long term (e.g. number of the population with tertiary education) and on the other side some short-term (e.g. level of public expenditure for R & D. Furthermore the scoreboards usually use a combination of indicators that reflect clearly defined microeconomic categories, as well as those that are structural in nature (for example, indicators relating to education, exports, employment, etc.) (see also for EIS Schibany & Streicher 2008a, 2008b). Here we may thus see that not all indicators may be influenced with the same ease; the policy choices are thus necessary influenced also by political preferences; with politicians usually not preferring measures which effect may be only seen long term or in areas where effects are difficult to achieve.

Next, we have seen on two examples also, that although some scoreboards are picturing all of the indicators as equally important, even simple day to day logic does not allow us to make the same conclusion. However even after identifying those indicators that would truly be worth to increase in the variety of indicators contained inside various scoreboards, they however do not always point straightforwardly towards actual (concrete) policy measures. Looking for example at the above example of (in our opinion in any case less relevant indicator) of firms offering formal training, which policy measures should be taken in order to insure for the lowest scoring EU member Greece (which is actually scoring on the 90th rank!) to do, in order for its firms to offer more formal training?

Furthermore, if the scoreboards are really to serve as a steering tool for innovation policies and if we were to champion them in their policy roles, it would be necessary for them to start dealing with the issues of quality of the data and its context. Especially in all cases of anomalies, an in-depth contextual analysis should be provided as to the reasons contributing to them[28]; only in this way truly depicting whether we are dealing with true "problem spots" of individual national innovation systems or if we are simply dealing with some sort of a statistical mirage (or a series of such mirages; contributing to unusual country rankings inside individual innovation scoreboards), as mentioned above. Hence, whether policy measures are needed or not; and where should they be directed at.

We have started this paper with the notion of an "explosion of innovation scoreboards"; hence in general no shortage of innovation performance results may be observed. However, Paruolo et al (2011) have in the title of their paper on rating and rankings asked whether it is "voodoo or science". We have in this publication tried to point out some of the general deficiencies and also some anomalies, which must be taken into account in order for the answer to be more in line of "science" than "voodoo".

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[28] It would seem that the evaluations of individual innovation policies could be in this way far more useful (such as OECD's reviews of innovation policies (currently 13 are in existence, the last one being for Slovenia (OECD 2012). Also works such as Adam & Modic (2012) are beneficial in this sense.

References

Adam, F. & Modic, D. (2012-forthcomming). *National Innovation Performance across Europe. The State of the Art of Performance Measurement.* Frankfurt: Springer Verlag.

Archibugi, D, Denni M. & Filippetti, M. (2009). The technological capabilities of nations: The state of the art of synthetic indicators. *Technological Forecasting and Social Change*, *76* (7), 917-931.

Arundel A. & Holanders H. (2008). Innovation scoreboards: indicators and policy use. In C. Nauwalers & W. Ren (Eds). *Innovation Policy in Europe: Measurement and Strategy* (pp. 29-52). Cheltenham, UK: Edward Elgar Publishing.

Arundel, A. (2007). Innovation Survey Indicators: what Impact on Innovation Policy? In: J. Wilson (Ed.) *Science, Technology and Innovation Indicators in a Changing World* (pp. 49-64). Paris: OECD.

Atkinson, R.D., Ezell, S.J. & Steward, L.A. (2012). Global Innovation Policy Index. Washington: The Information Technology and Innovation Foundation and The Ewing Marion Kauffman Foundation.

Atlas of Economic Complexity (2011). Retrieved from: http://atlas.media.mit.edu/

Box, G. E.P. & Draper N.R. (1987). *Empirical Model-Building and Response Surfaces.* New Jersey: John Wiley & Sons.

Castellacci, F. & Natera, J.M. (2010). A new panel dataset for cross-country analyses of national systems, growth and development (CANA). NUPI Working Paper No. 783.

EPO statistics. (2011). Total European patent applications filed with the EPO 2001-2010. Retrieved from http://www.epo.org/about-us/statistics.html

European Innovation Scoreboards and Innovation Union Scoreboards 2001-2011. Retrieved from: http://www.proinno-europe.eu/metrics

Eurostat CIS 2008 and EPO patents for 2008 data. Retrieved from: http://epp.eurostat.ec.europa.eu/portal/page/portal/science_technology_innovation/data/database

Evertsen, J. (2008). *Rethinking the European Innovation Scoreboard: Recommendations for further improvements*. Input paper for the workshop on »Improving the European Innovation Scoreboard methodology, Brussels, 16 June 2008. Retrieved from: http://hollanders.unu-merit.nl/workshop/

Fagerberg, J. (2006). Introduction: A Guide to Literature. In D. Fagerberg, C. Mowery & R. R. Nelson (Eds.), *The Oxford Handbook of Innovation* (pp. 1-26). Oxford: Oxford University Press.

Foyn, F. (2006). Using the Oslo methodology to measure innovation: The Community Innovation Survey approach. In W. Blankley et al (Eds.), *Measuring innovation in OECD and non-OECD countries* (pp. 111-122). Cape Town: OECD- HSRC press.

Godin, B. (2011). The Rise of Innovation Surveys: Measuring a Fuzzy Concept. Retrieved from: http://www.sussex.ac.uk/Units/spru/events/KP_Conf_03/documents/Godin.pdf

Grupp, H. & Mogee, M.E. (2004). Indicators for national science and technology policy: how robust are composite indicators. *Research policy*, *33,* 1373-1384.

Grupp, H. & Schubert, T. (2010). Review and new evidence on composite innovation indicators for evaluating national performance. *Research Policy*, *29* (1), 67-78.

Handbook on constructing composite indicators. (2008). Paris: OECD.

Hollanders, H. & van Cruysen, A. (2008). *Rethinking the European Innovation Scoreboard: A New Methodology for 2008-2010*. Geneva: Pro INNO Europe.

http://www.proinno-europe.eu/page/thematic-papers-2.   Accessed   17
August 2011.

Hollanders, H. (2009). European Innovation Scoreboard (EIS): Evolution and
Lessons Learnt. Workshop: Innovation Indicators for Latin America
Workshop OECD, 19 March 2009. Maastricht: Maastricht University.
Retrieved   from: http://www.proinno-
europe.eu/sites/default/files/repository_files/10/07/42468972.pdf.

Index of the Massachusetts Innovation Economy. (2009). Retrieved from:
http://www.masstech.org/institute2009/the_index_2009.html.

Indiana Business Research Centre Innovation Index. Retrieved from:
http://www.statsamerica.org/innovation/innovation_index/index_display.a
sp.

Innovation   Union   Competitiveness   Report   2011.   Retrived   from:
http://ec.europa.eu/research/innovation-
union/index_en.cfm?section=competitiveness-report&year=2011

IPRIA. (2009). Innovation Report: Assessing Australia's Innovative Capacity.
Retrieved from: http://www.ipria.org/publications/reports.html

Jakl, M., Lukeš, M., Lorencova, H., Novy, I. & Lukešova L. (2009). Culture,
Innovation and Policy Perspectives. Policy Paper on national cultural
strengths and innovation, Project no. FP6 – 043345. Retrieved from:
http://portale.unibocconi.it/wps/allegatiCTP/D%2010.3.pdf

Mairesse, J. & Mohnen, P. (2010). Using innovation surveys for econometric
analysis. UNI-MERIT Working paper #2010-023. Retrieved from:
http://www.merit.unu.edu/publications/wppdf/2010/wp2010-023.pdf

MSTI – Main Science and Technology Indicators. Retrieved from:
http://stats.oecd.org/BrandedView.aspx?oecd_bv_id=strd-data-
en&doi=data-00182-en

OECD Science, Technology and Industry Outlook 2010. Retrieved from:
http://www.keepeek.com/Digital-Asset-Management/oecd/science-and-

technology/oecd-science-technology-and-industry-outlook-2010_sti_outlook-2010-en.

OECD Science, Technology and Industry Scoreboard 2011. Retrieved from: http://www.oecd-ilibrary.org/science-and-technology/oecd-science-technology-and-industry-scoreboard-2011_sti_scoreboard-2011-en.

OECD. (2010). *Measuring Innovation*. Paris: OECD.

Paruolo, P., Saltelli A. & Saisana, M. (2011). Rating and Rankings: Vodoo or Science? Retrieved from: http://arxiv.org/pdf/1104.3009.pdf

Paas, T. & Poltimae H. (2012). Consistency between innovation indicators and national innovation performance in the case of small economies. Eastern Journal Of European Studies, 3 (1), 101-121.

Porter, J. L., Porter, M.E. & Stern, S. (2002). The determinants of national innovative capacity. *Research Policy*, *31,* 899–933.

Porter, M. E. & Stern, S. (2001). Measuring the »ideas« production function: Evidence from international patent data. NBER working paper 7891. Retrieved from: http://www.nber.org/papers/w7891.pdf.

Porter, M. E. & Scott, S. (2002). National Innovative Capacity. In: GCR (Ed), *The Global Competitiveness Report 2001-2002*. New York: Oxford University Press.

Rammer, C. (2008). Comments on „Recommendations for further Improvements of the EIS". Prepared by MERIT for the Commission workshop on June 16th, 2008. Retrieved from: http://hollanders.unu-merit.nl/workshop/EIS-Revision08_ZEW-comments.pdf

Rossi, F. (2002). An introductory view on innovation studies. MPRA Paper 9106. Retrieved from: http://mpra.ub.uni-muenchen.de/9106/1/MPRA_paper_9106.pdf

Sajeva, M., Gatelli, D., Tarantola, S. & Hollanders, H. (2005). *2005 European Innovation Scoreboard – Methodology Report*. Brussels: European Commission.

Saltelli, A., Annoni, P. & Tarantola, S. (2011). Innovation and Competitiveness Indicators. Prepared for JRC EU Commission, Budapest, April 4, 2011. Retrieved from: http://ec.europa.eu/dgs/jrc/downloads/events/201104-budapest/20110405_budapest_saltelli.pdf

Scerri, M. (2006). The conceptual fluidity of national innovation systems: Implications for innovation measures. In M. Blankley et al., *Measuring innovation in OECD and non-OECD countries* (pp. 9-19). Cape Town: OECD-HSRC press.

Schibany, A. & Streicher, G. (2008a). The European Innovation Scoreboard: drowning by numbers? *Science and Public Policy*, *35* (10), 717-732.

Schibany, A. & Streicher, G. (2008b). How not to compare innovation performance. A critical assessment of the European Innovation Scoreboard (EIS). Prepared for a Workshop of MERIT/DG Enterprise and Industry: »Improving the European Innovation Scoreboard methodology«. Retrieved from: www.prime-noe.org

Schibany, A., Streicher, G. & Gassler, H. (2007). *Der European Innovation Scoreboard: Vom Nutzen und Nachteil indikatorgeleiteter Laenderrankings*. Wien: InTeReg.

Schubert, T. (2006). How robust are Rankings of Composite Indicators when Weights are Changed: Proposing a New Methodology. Retrieved from: http://isi.fraunhofer.de/isi-en/p/mitarbeiter/tos.php.

Schumpeter, J. (1939 [2008]). *Business Cycles. A Theoretical, Historical and Statistical Analysis of the Capitalist Process.* New York Toronto London: McGraw-Hill Book Company.

Sitanyi, L. (2010). The innovation position of four neighbouring countries and Hungary based on the "European Innovation Scoreboard. Regional and Business Studies, 2 (1), 1–21.

Smith, K. (2006). Measuring innovation. In J. Fagerberg et al., *The Oxford Handbook of Innovation* (pp. 148-179). Oxford: Oxford University Press.

The Global Competitiveness Index Data Analyzer 2010-2011. Retrieved from: http://gcr.weforum.org/gcr2010/

The Global Innovation Index Data Analyzer 2012. Retrieved from: http://www.globalinnovationindex.org/gii/main/analysis/rankings.cfm#CGI.SCRIPT_NAME#

The Global Innovation Index. Retrieved from: http://www.globalinnovationindex.org/

Tijssen, R. J.W. (2003). Quality assurance: Scoreboards of research excellence. *Research evaluation, 12* (2), 91-103.

World Competitiveness Scoreboard. Retrieved from: http://www.imd.org/research/publications/wcy/upload/scoreboard.pdf

World Competitiveness Yearbook. (2010). *Country Profile Slovenia*. Available in authors archive.

Development of the internet in primary schools with an emphasis on the proposed intranet structure

Dušan Klobasa,
Faculty of Electrical Engineering and Computer Science, Slovenia
dusan.klobasa@gmail.com

Suzana Bračič,
Head of Finance and Accounting in the Home of the Elderly, Slovenia,
megasuzana@gmail.com

Abstract: *The Intranet is a remarkable source of information for every school, it is a means of internal communication and a tool assisting the users in their learning processes, exchange of internal information and electronic collaboration. In this article, the development of the Intranet in primary schools around the globe is presented, with a special emphasis on the development of the Intranet in primary schools in the Netherlands, Australia, England, the USA and Slovenia. The content and structure of an Intranet portal for the needs of primary schools was proposed. Thus, the documents, information and ideas are stored in one place, while easy access to timetables, classes, learning materials and other documents is enabled for teachers as well as pupils and their parents. When using the Intranet, the users extend their range of knowledge, reinforce their self-confidence and develop skills of the 21st century needed for their further development.*

Keywords: *Intranet, information system, school, communication, electronic collaboration.*

Introduction

In the developed business world, the Intranet plays a leading role in the communication between the employees and the administration. But, in the educational system, communication is still conventional in nature as the information system is not developed enough for the educational process.

An organisation which requires a high level of information in order to carry out business processes is in the need of a well-regulated information system. This system should help eliminate poor communication between the departments and between individuals as well as to facilitate access to business information. Problems with information are consequently reflected in many ways, among which the following are the most dominant:
• various working groups are not able to bring their activities into line,
• difficulties in the communication can be often observed between the employees, particularly administration – educators,
• storing information on learning performance of individual classes is not systematic (Slovenian Association Informatics, 2012).

Development of the Intranet in primary schools

Intranets which appeared in the middle of the nineties of the last century provide for spreading of information within organisations. The expression "Intranet" first appeared in the press in April 1995 in the Digital News & Review (Wikipedia, 2012). Educational institutions which have already introduced the Intranet usually speak of both good and bad experience. The good ones have been upgraded, and the bad ones are being eliminated, thus enabling the user as simple and friendly work as possible.

The EduRep Project, the Netherlands

In 2005, the Netherlands presented the EduRep project (Educational Repositories Network)[29], a single uniform search interface for searching teaching materials developed by the Kennisnet company. The interface uses the harvesting protocol that can search various databases. Search queries can be entered through one central website, or the harvesting protocol can be installed on a particular school environment (ELO-Electronic Learning Environment) through which enquiries can be conducted. This project brings advantages mainly to teachers as they can find the necessary resources easier and faster on places they normally use.

The role of content suppliers, intermediate users and end users as well as the relationship between each other as a mechanism for transfer and distribution is innovative as they can connect among themselves via one platform. Moreover, the system uses the already acknowledged standards, manages intellectual property and is easy to use.

The Smart Classrooms Project – QueensLand Australia

The Smart Classrooms Project was carried out in the years 2005–2007 in Australia. This project was intended to facilitate schools to provide teachers, students and parents access to learning materials and information. The Intranet is presented as a webpage where all the information is gathered which provide support to schools in their activities.

The Ministry of Education and the Arts sets very high requirements for the display of student's and teacher's information on the Internet. The student's information can be displayed on the school's Intranet webpage as it can be accessed only be employees and students of a particular school. Thus, the Intranet webpage includes the following applications: curriculums, timetables, bulletin board, daily news, calendar, forum, e-mail, links to websites, documents necessary for the study, special site for teachers.

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[29] http://contentketen.kennisnet.nl/activiteiten/edurep, 2010.

Certain restrictions have also been imposed on the Intranet portals. Namely, the naming of files; all files must be named in lowercase without spaces or special characters, and the documents must be smaller than 500 kB as this increases the flow of files across the Internet, photos must be in JPEG format and no larger than 20 kB, graphics must be in GIF format and no larger than 20 kB. Such measures have ensured that the information required by teachers and students are transferred very quickly from the server to their computers. At the same time, they do not burden other traffic transmitted between the server and clients.

The security has been ensured by limiting access to the Intranet webpage to the local network only. This information may include images and other data relating to students and their achievements as well as the learning material. Moreover, teachers can also share documents and ideas within a safe environment.

Kirwan State High School has already incorporated an Intranet portal into its operations and named it OurSchool.[30] This project exchanges data between different resources at the school and sends them to the Internet through a secure connection where they are then accessible to students. The OurSchool project will provide the participating schools with:
- student's data which will be accessed by parents our caretakers,
- an efficiency test of the current security, security policy and security of passwords,
- integration of the School Management System (SMS) with parents and caretakers and
- assistance in assessing business and function requirements for the project at the national level and vision of the project from the perspective of teachers, administrators, students and parents.

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[30] http://ourschool.eq.edu.au, 2012.

The Towards the Intranet Project: Schools Following the Trend-Bridget A. Rickets, California, the USA

WebCT is one means of using Intranet in the classroom. Users access WebCT through either Firefox or Internet Explorer. They are always asked by the system for a username and password. Then, the users can access their e-mail used for communication, the bulletin board where they can read or post discussions and the webpage for posting their assignments. WebCT allows them to see their grades and to monitor their personal development.

WebCT was developed in two versions; one version for universities and the other for other educational institutions. The university version consists of three main parts: presentation, communications and grading. Within the presentation section, the lecturers elaborate dynamic learning materials. The communications section provides for broad support to group work and the user is offered tools necessary for successful communication. The third, grading section, allows the lecturer to easily elaborate and manage a broad range of online-grades and assignments of every student.[31]

Teachers should be aware of one of the following five factors offered by the Intranet in their work and in the classroom:

• construction of knowledge rather than instruction,
• developing authentic rather than artificial learning tasks,
• giving students voice already within the learning process,
• enabling students to utilise knowledge from their life experiences,
• enabling students to actively participate in the construction of the teaching process.

LGfL (London Grid for Learning), England

Already on the homepage of the school, there is an upper menu bar which enables e-learning, files, tools, etc. The page already contains the possibility to log in to the LGfL system where students can access two portal services, that is, Atomwide and Digitalbrain. To access each of the portal services, it is necessary to enter a username and password, and the selection is made

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[31] http://www.webct.com, 2011.

through a menu where the user first chooses the portal and then enters the username and password.[32]

The portal contains content that students need for their work: their homepage, directory, inbox, calendar where the most interesting of all is the section where students can define their own tasks to be solved. Those exercises can be entered on a daily, weekly or monthly basis. When the student accomplishes a task, he marks it. This helps to improve the transparency of work with students who are a bit more disorderly. Students can choose between different background colours and fonts and thus custom design their view of the portal. A particularity is also the "common" calendar. Each student using the calendar can set dates in the common use. He can also share his folders and files. Each user can lock folders for which he does not want others to see or browse. The use of the portal is simple thanks to navigation icons.[33]

Development of the Intranet in Slovenian schools

As the Intranet is the domain of every individual school, it usually is not published on the World Wide Web. We could observe only the teacher's section on individual Intranet pages in Slovenia where they can log in with the username and password.

Development of portal services in Slovenia became the activity of The National Education Institute. A group for exploring the Content Management Systems (CMS) was set up in the 2005/06 academic year. The mentioned group studied some freely accessible systems, chose Mambo, translated it to Slovenian and provided it with some additional components which would be appropriate for schools. A cover web location was established on setting up portals which should be independent of platforms. On this web site the user can find guidelines on the construction of the web site and the instructions for the construction of a portal. The Slomambo web portal was constructed which enables the transfer of files of the translated Mambo system. It is a freely accessible application which is easy to install and use. The user is not

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[32] http://www.lgfl.net, 2010.

[33] http:// wayf.org.uk, 2011.

required to have knowledge of the HTML[34] language. In the following years, the development team will try to find and evaluate new systems in the field of content management, collaborative work and web systems in general. It will offer support to schools which will decide to generate a portal and examine options of using the system for other tasks too, for example blogging.

A good example is the Log Dragomer primary school where a web classroom, an information portal and a school forum have already been set up for their students. Thus, there is already on its homepage an elaborated menu where you can select the InfoPortal or the e-classroom. To access this part, it is necessary to obtain a username and password. This way, the administrator is allowed to see and keep records of accesses to portal. The idea of web classroom seems reasonable because more and more information are being searched on the Internet. Even the InfoPortal is a very interesting idea as all the information about the school which is needed by students, parents and teachers are gathered in one place.[35]

Anticipated content of the Intranet in primary schools
In order to increase the usability of the Intranet, it is good if it is determined by name and thus brought even closer to users. A simple navigation and design which is repeated throughout the subsites should be made. The start page of the portal should include a set for the login to the portal with the username and password as well as a set designed for useful information gathered from the Internet, for example weather in Slovenia, current world time, calendar and a list of public holidays in the current month. These modules would be updated automatically. Moreover, the start page would include the adjusted list of useful internet links. In the upper right corner, the user should be displayed who is logged into the portal, and at the bottom a countdown to the moment when the application will log him out automatically due to his inactivity should be displayed. Automatic logout should be implemented due to the forgetfulness of users. Searching by

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[34] http://cms.edus.si, 2010.
[35] http://www.oslogdragomer.org, 2011.

keywords is of crucial importance as it assures efficient enquiry among a multitude of documents and quick access to desired information. Search box and button are to be visible on every subsite where a user can always access the search engine.

In most schools, data and information are related to the students' learning performance and teachers' work. The content of an Intranet portal should include the following categories: School, Employees and Students. The proposed structure of a portal is to optimise the coverage of needs and wishes of students, teachers, school administration and parents. Teachers could quickly obtain data on individual students, the administration could access all data on teachers and students, and both the students and parents would have access to data on learning performance. It is important to regularly update the Intranet connections and data published on the Intranet. The Intranet group is to provide users with support and assistance when using the Intranet.

a) School category
The School category should include the following subcategories: General, Bulletin Board and Forum. The section General aims at presenting the school and its employees, the curriculum, timetables, learning material and other relevant documents for each school year. The Bulletin Board should be used for publishing the latest news, important meetings, information on instruction programmes, trips, leisure activities for employees, festive wishes and the announcement of events. The users are provided the possibility to subscribe to the news which would be divided into individual areas of interest. When someone would post news within a particular area of interest, the system would send all the registered a notice of the change and address of the news release including the link to this news. In order for the Intranet users to have the maximum benefit, it is necessary to promote a continuous exchange of comments and suggestions by setting up a forum and web surveys.

b) *Employees category*

The Employees category should include the following subcategories: Data on employees, Documents and Materials, Reservation of a classroom and hardware, Reports on the work of working groups and work on projects, Records of grading periods, Class success and Class statistics.

The "Data on employees" category should include an internal telephone directory and e-mail addresses of employees (including their photographs). As the employees are divided into different groups within the organisation, the Intranet should allow handing in reports on the activities of a definite group and how it influences the changes in the learning process.

In addition to the obligatory documents and materials needed by a professor in the teaching, the applications for the elaboration of monthly and annual forecasts of leaves should be added and updated. Every teacher should have written his subjects on the portal. A teacher who is a class teacher of a particular class should write a record at the end of a grading period in which he should state the students who are negative or have little knowledge in a specific area. The record of grading periods will be simplified by the use of the Intranet as the students of the respective class have already been entered into the system and it only takes to click them to choose them and to write a comment on them. All these actions are confirmed by pressing the Save button. When the teacher has entered all his students, he can finish the record. Usually, the principal sets the date by which it is to be completed. A completed record cannot be corrected but only inspected. When a teacher has completed the record but would like to add something, he must first agree with the principal and then with the portal administrator to unlock the register. The upper right corner gives the teacher a possibility to export data to Microsoft Excel and Word and to print it out.

It is a good idea to place the Reservation of classrooms and hardware on the portal which can then be done from home. It often happens that the teacher, who would like to have a projector in his classroom at a certain lesson, finds this out only at home.

When entering the success at his subject, the teacher enters the number of students who were excellent, very good, etc., and his computer will automatically calculate the mean grade and the number of points. All these factors create the performance of the whole class. Each teacher has to elaborate also the statistics of his class at the end of the year. So it can be seen at the end of the year for each class how many students were enrolled, how many of these students passed the class and what was their learning success.

c) Students category
The Students category should include information on students and their learning achievements. The proposed subcategories are as follows: Certificate, E-markbook and Learning material.

The Certificate and E-markbook would allow parents to see the teachers' comments, grades, success and absence of their children. Learning material are aimed at students so they can browse the material and print out a particular study material as well as do and hand in their homework. The material usually contains images, sounds, films and animations which require a quite fast speed of data transfer, more powerful Internet network and computer.

We also suggest a link to the portal of the Ministry of Education and Sport where information on the situation in individual schools may be obtained at any time.

Trends in the field of the Intranet development
Intranet is becoming more personalized and tailored to preferences of each user. More and more organisations allow personification. This means that the web server identifies the user and determines for him on the basis of user data which contents are the most appropriate and useful for him. Thus, two persons can see a completely different content on the same page at the same time. Users can more quickly access the desired information, but may miss some information that might be of interest to them (Nielsen Norman Group, 2010).

Another possibility is the personal settings. Users can choose which content they want to see when they enter the Intranet and also in what form they are shown. Thus, the users can fully adapt the content to themselves and also get what they want and when they want. Personal settings allow faster navigating the portal without any redundant search for information. The disadvantage is that the users may overlook certain new features to which they are not subscribed to. When introducing such personalised services, we must be careful not to allow a too narrow orientation of users. We have to ask ourselves whether the information on the Intranet is arranged reasonably in order for the user to access the desired information quickly (Pernice, Schwartz, Nielsen, 2008).

One of the latest trends is also the integration of information sources. Homepages of the Intranet are becoming portals offering connections to many sites both inside and outside of organisations (so called "on-stop shopping" page). In some large connections, the portals are composed of a number of smaller Intranet sites which are arranged and managed by individual departments, divisions or branches from different parts of the world. This approach is very practical as the organisation has not only one centralised team managing the entire (possibly very large) Intranet, but the responsibility is divided into individual parts that create and edit the content (Rolih, 2007).

The organisations put an increasing emphasis on applications which are crucial for attaining objectives of these organisations. They improve the event calendars and project planners, integrate reminders with the Intranet so that the employees receive notifications of important events and organisational goals via e-mail and integrate the external and internal news. More and more time is dedicated to improve the search engines as the good search engines can save a lot of employees' time (Nielsen Norman Group, 2009).
More and more organisations have set objectives for the Intranet use and measure its effectiveness. Mostly, they measure the number of daily and

weekly users, average time of daily usage, what contents are the most visited by the users and what applications they use (Intranet roadmap, 2010).

Conclusion

The primary purpose of the Intranet is to disseminate information and knowledge among the employees. Precious time that would be otherwise wasted on searching and collecting information is saved when an efficient and up-to-date Intranet portal has been set up.

The proposed concept of the Intranet for primary schools allows the creation of working conditions that encourage people to a rational and rapid implementation of their work in school. Thus, the intranet portal enables a network where the students can review the materials, the parents have the opportunity to inspect the grades of their children, and the teachers can write records of marking periods, complete certificates and print them out and elaborate the statistics and the success review from their homes.

We establish that the Intranet surely is an educational trend of future, mainly due to new media and life in a society where the knowledge and the use of a computer are indispensable to all users. It is important to respect the wishes, demands and needs of the students and parents, and to that add the adjustment of learning processes, learning materials and additional training of the educational personnel.

References

Educational Repositories Network. (2010). *Educatieve Contentketen*. URL: http://contentketen.kennisnet.nl/activiteiten/edurep (11.2.2012).

Group, Nielsen Norman. (2009). *Intranet design annual 2009: Year's ten best intranets*. Fremont: Nielsen Norman Group.

Group, Nielsen Norman. (2010). *Great Technology Sector Intranet Designs*. Fremont: Nielsen Norman Group.

Intranet Roadmap. (2010). *Tool box*. URL:
http://www.intranetroadmap.com (14.2.2011).

Kirwan State High School. (2012). *School Management System*. URL:
http://ourschool.eq.edu.au (1.3.2012).

London Grid for Learning. (2010). *LGfL Services Guide 2010*. URL:
http://www.lgfl.net (7.2.2012).

Osnovna šola Dragomer. (2011). *Intranet.* URL:
http://www.oslogdragomer.org (4.12.2011).

Pernice, C., K., Schwartz, M., Nielsen, J. (2008). *Intranet Design Annual
2007*. Fremont: Nielsen Norman Group.

Petrič, I. (2004). *Predlog vzpostavitve in razvoja intraneta v podjetju
SAOP računalništvo*. Ljubljana: Univerza v Ljubljani, Ekonomska
fakulteta.

Rolih, R. (2007). *Intranet as a tool of internal communication*. URL:
http://www.panta-rei.si/intranet (20.1.2012).

Schools Following the Trend Bridget A. Rickets. (2011). *Transact
Support.* URL: http://www.webct.com (11.10.2011).

Slovenian Association Informatics. (2012). *Bela knjiga. Elektronsko
poslovanje malih in srednje velikih podjetij. Lyonska delavnica.* URL:
http://www.drustvoinformatika.si/publikacije/belaknjiga (7.3.2012).

The LGfLaai Federation. (2011). *Post-project developments.* URL:
https://wayf.org.uk (12.2.2012).

The National Education Institute. (2010). Content Management
Systems (CMS). URL: http://cms.edus.si (14.7.2010).

Wikipedia. (2012). *The Free Encylopedia. Intranet*. URL:
http://en.wikipedia.org/wiki/Intranet (14.2.2012).