* makes a distinct contribution to knowledge in the area with which it deals
* contains a substantial amount of material suitable for publication
* affords evidence of originality shown either by the discovery of new facts
* or by the exercise of independent critical power;
* is satisfactory as regards its literary presentation
* That the thesis meets all required standards in terms of the nature and quality of work undertaken, and the degree can be awarded without any further work by the candidate, other than the correction of typographical errors and small lapses of expression and presentation in the final copy.
* Given the quality and importance of experimental results of Zuzana Mikulková’s work, I fully recommend this thesis to be accepted as the fulfilment of the requirement for awarding PhD degree to the candidate according to the law §47 section 4. RNDr. Dominik

Zuzana Mikulková’s thesis represents a first class work presented in a well-written standard format which brought a significant advancement in the field of T1D pathogenesis. Multiple experimental approaches, many advanced procedures and techniques described, open presentation and discussion about successful but also less successful experiments, decent analysis of obtained results as well as the discussion demonstrate that the author is fully prepared for the scientific carrier she has chosen and is able to work independently. Zuzana Mikulková has already published five papers in well recognized international journals

**Bishop John V. Taylor: Poet, Priest & Prophet:**

**Christian Mission in the Global Village**

**Thesis Submitted for the Doctor of Philosophy**

**Monash University**

**Melbourne**

**David Graeme Wood**

B.A. (Melbourne), M.A.(Honours), B.D.(Melbourne College of Divinity)

I recommend that the candidate be awarded the degree of Doctor of Philosophy without further examination.

This thesis is an outstanding piece of research and writing, distinguished by: thorough use of primary materials and interviews; a sympathetic portrayal of a significant Christian leader; a deep and wide-ranging engagement with current missiology, christology and ecclesiology; clear demonstration of how biography and theology are interwoven; fine critical skills; an ability to mount detailed and cogent argument; and a real gift for lively and yet carefully nuanced writing.

In summary this research adds significantly to the discipline of missiology not only by uncovering and bringing together previously unpublished understandings of John V. Taylor, but also by presenting as it goes a passionate, sophisticated, balanced and well-informed approach to Christian mission. Two related themes which are particularly well treated are christology and the theology of non-Christian religions. The thesis is a model of the humble, open and inclusive model of mission so clearly shown to be embodied in John Taylor. It is an eloquent apologia for an incarnational approach to mission which Anglicans have often contributed to the wider Christian church.

The thesis is marked by a lively interaction between the theology of John Taylor and that of the candidate, the latter being developed mostly in sympathy with Taylor but as a distinguishable voice. The thesis also makes appropriate links with the theology of major theologians such as Karl Barth and Deitrich Bonhoeffer.

The central questions addressed by the thesis were the extent to which Taylor made an original contribution to theology and missiology, and to what extent Taylor’s Ugandan experience influenced his later thought. It would have been good to have found an explicit summary of the candidate’s conclusions at the end of the thesis. Although chapter five is devoted to Bonhoeffer’s theology in order to demonstrate that he deeply influenced Taylor, it contains no footnoted evidence of Bonhoeffer’s ideas appearing in Taylor’s works. The links are made from time to time later in the thesis, but the Bonhoeffer chapter is the least integrated in the thesis.

At times Taylor’s weaknesses in thought or character seemed to call for a little more robust critique, but overall the candidate showed sufficient critical distance to satisfy me. Any hankering in me for a more sober estimate of Taylor was eclipsed by the sense that the thesis is remarkable in the way it gets inside the mind and passion of Taylor and uncovers his significance as a Christian leader.

I enclose a list of minor comments (noting occasional typographical errors and raising bibliographical queries) for the candidate’s benefit if he intends to publish the thesis. None of them merits discussion in the body of this report.

I have never before so enjoyed the reading of a thesis. In fact I was not able to put it down. I commend the candidate on his diligence, clarity of insight and maturity of thought. I also commend him for achieving beauty in prose (it positively soars at times) and for expressing his values and aspirations so integrally within an academic work. In my judgment, this thesis is rare in that it would take little editing to make it a thoroughly readable book for a wider audience.

**Examiner's report of doctoral thesis**

**Author:** NguySn Thanh Dung

**Title:** Secure Encryption via Deterministic Chaos

**Examiner:** doc. RNDr. PaedDr. Eva Volmi, PhD.

University of Ostrava

**Objectives of the thesis and their fulfilment**

A given doctoral thesis is focussed on possibilities of evolutionary algorithms, which

are applied to enhance the quality of recovered signal in chaotic secure communication

system. The Pecora and Carroll, Active-Passive Decomposition method and Feedback method

are used to achieve the synchronization of chaos communication. Differential evolution

algorithm and Self-Organising Migrating Algorithm are used as the evolutionary algorithms

to find the unknown parameters of receiver chaotic systems. Chosen methods can be

considered as fully competent and it is sufficient for purposes and objectives of the PhD

thesis. The given thesis has fulfilled its main objectives and its topic is up to date.

**Benefits in the field of knowledge**

The synchronization error always exist in the communication system, therefore

application of evolutionary algorithms to improve the quality of communication chaos is

required. The author's new proposal demonstrated that the synchronization qualities of

chaotic secure communication, which were achieved by estimated parameters via

evolutionary algorithms, is always better than that of original. Next, it is possible to state that

all realized simulations gave satisfactory results and thus evolutionary algorithms are

successful in solving this difficult problem.

The proposed procedures and methodologies are supported by several publications of

the doctoral student. In the years 2009-2012, he published 9 articles in journals and at

international conferences and workshops.

**Benefits in the field of social practice**

The author created a pilot application, which introduced a method of improving the

efficiency of chaotic communication schemes. It is obvious that the proposal is based on good

author's knowledge and experience with an implementation of similar problems in practice.

**Formal arrangement**

The doctoral thesis has 105 pages. The whole thesis is written in English. The thesis is

written and structured in a logical and well arranged way. Its text is presented at an

appropriate level of expertise and it is compact, only some of the images are not of adequate

quality.

**Questions and comments**

1. I miss a more detailed state of art. Could you briefly specify whether a given issue has

been solved by other softcomputing methods too?

2. Could you specify your contribution in multi-authors publications?

**Conclusion**

The submitted thesis fulfils the requirements for a doctoral thesis, both in terms of

theoretical - methodological level, so the usefulness in practice. The thesis contains the

original results.

I recommend the thesis to the defence before the relevant commission. Based on the

thesis, I suggest the academic and scientific degree "Doctor Philosophiae" (Ph.D.

abbreviation) to confer to Nguy~n Thanh Dung after successfully defending of his thesis.

Ostrava, 20 September 2012 Doc. RNDr. PaedDr. Eva Volmi, PhD.

**Review of Ph.D. work**

**Secure Encryption Via Deterministic Chaos**

Study-branch:

Author:

Supervisor:

Reviewer:

Technical Cybernetics

Nguyen Thanh Dung

Prof. Ing. Ivan Zelinka, PhD.

Doc. Mgr. Roman Jasek, Ph.D.

About Work and Main Aims of this Work are these:

The evolutionary algorithms are applied to enhance the quality of recovered

signal in chaotic secure communication system that is the core objective of this

dissertation. The synchronization error between the transmitter and the receiver in

communication systems is used to design the cost function.

The parameters of chaotic dynamic model are estimated by evolutionary

algorithms via minimizing the synchronization errors. By this *way,* the quality of

recovered signal is increased when the synchronization error approaches to

minimum value. The Pecora and Carroll method (PC method), Active-Passive

Decomposition method (APD method) and Feedback method-three synchronization

methods are used to achieve the synchronization of chaos communication.

Differential evolution algorithm (DE) and Self-Organising Migrating Algorithm

(SOMA) are used as the evolutionary algorithms to find the unknown parameters of

receiver chaotic systems. The synchronizations of identical chaos are executed:

Synchronization of three dimensional Lotka-Volterra systems via PC *method,*

synchronization of four dimensional Qi systems via APD method, synchronization of

four dimensional Liu systems via Feedback method. The powerful of EA on this

problem are also proven via the synchronization of 5 and 6 dimensional chaotic

systems.The application of EA is used for designing the control function in the

synchronization between two difference chaotic systems.Based on the optimum

results from evolutionary algorithms, the estimated values are used to reconstruct

the receiver chaotic systems. The optimal quality of synchronization is achieved by

using the estimated parameters. The synchronization between the transmitter and

the receiver chaotic system is used to retrieve the transmitted information in

Chaotic Masking Scheme (CMS). The quality of chaotic secure communication is

enhanced with estimated parameters.

Advantages in knowledge

In any communication *system,* there are synchronization errors. The choice of

evolutionary algorithms, therefore, in my opinion, an innovative contribution.

Outputs of the author confirmed that their implementation was appropriately

chosen procedure.

**Advantages in terms of social practice**

The author created a pilot program that introduced a method to improve the

efficiency of chaotic communication systems. It is clear that the proposal is based on

the author's good knowledge and experience in implementing similar problems in

practice.

**Presentation**

Dissertation is 105 pages, has a good and clear structure. Nedostacna image quality

is to reduce the overall level of work.

High quality publication outputs are the author, in which their practices interpetuje

(in 2009-2012 was issued 9 articles in journals and at international conferences and

workshops).

**Questions and comments**

First Where else could you use outputs of your work? Where do you see the

evolutionary algorithms as a tool of competitive advantage?

**Conclusion**

The submitted thesis fulfils the requirements for a doctoral thesis, both in terms of

theoretical - methodological level, so the usefulness in practice. The thesis contains

the original results.

**I recommend the thesis to the defence before the relevant commission. Based**

**on the thesis, I suggest the academic and scientific degree "Doctor**

**Philosophiae" (Ph.D. abbreviation) to confer to** Nguy~n **Thanh Dung after**

**successfully defending of his thesis.**

Review of PhD work of Mr. Ing. Nguy~n Thanh Dung named *,Secure Encryption*

*Via Deterministic Chaos"*

Doc. Dr. Ing. Tomas Brandejsky, FTSci CTU in Prague

From the formal viewpoint, the work written in English language consists of 83 pages of

original text extended by such parts like Acknowledgements, Abstract (in both English

and Czech languages), lists of Contents, Figures, Tables and Symbols and Abbreviations.

The work is naturally dividtd into 3 parts and 15 chapters. The separate parts are

Introduction, Theory and Experiment. These chapters are named Introduction and State

of Art, The Aims of Dissertation, Secure Communication Based on Chaos,

Synchronization Methods, Chaotic Systems, Evolutionary Algorithms, Design of

Experiment- Cost function, Synchronization of 3D Lotka-Volterra System via Pecora

and Carroll method, Synchronization of 4D Qi Chaotic System via Active-Passive

Decomposition method, Synchronization of 4D Liu Chaotic System via Feedback

method, Synchronization of 50 Lorenz Chaotic System, Six Dimensional Example:

Synchronization of 60 Lorenz Chaotic System, Synchronization of Two Different

Chaotic Systems, Application on Chaotic Secure Communication System and

Discussions and Conclusions.

The first chapter named Introduction and State of Art consists of two pages and it

describes problem domain and structure of the work. There are also listed presented

experiments.

Within the second chapter The Aims of Dissertation, which is one page long, the main

objectives of the work are summarised.

The chapter Secure Communication Based on Chaos opens second - Theoretical - part of

the work. It contains three pages and explains general structure of chaotic system, Chaos

Shift Keying and Chaotic Masking Scheme chaotic communication methods.

Fourth chapter named Synchronization Methods also consists of three pages and it

introduces fundamental synchronization methods as it is Pecora and Carroll method,

Active-Passive Decomposition method and Feedback method.

As the topic tells, the next chapter describes Chaotic Systems. This chapter introduces

systems used in the following experiments, namely they are Lorenz system, Rossler

system, Li.i system, Lotka-Volterra system, Lorenz - Stenflo system, Qi system, Liu

system, Roy and Musielak 50 extension of Lorenz system and Kennamer 60 extension

ofthe same system.

The sixth chapter named Evolutionary Algorithms introduces applied used in experiments

described in the work (by my mean, they are not used to simulate anything - chapter 6,

page 34, line 2). They are differential evolution and SOMA.

The last and the largest part of thesis is Experiment Section. It starts with the chapter

Design of Experiment - Cost function. Within this chapter, cost function, used HW and

SW equipment and DE and SOMA algorithm parameters are described.

The chapter Synchronization of 30 Lotka-Volterra System via Pecora and Carroll

method presents experiments with this system. Unfortunately, the synchronization of the

-

some systems using another method is not compared (the similar remark might be written

also in same following experiments).

The ninth chapter Synchronization of 40 Qi Chaotic System via Active-Passive

Decomposition method describes experiments with another system using different

synchronization method.

The tenth chapter describes Synchronization of 4D Liu Chaotic System via Feedback

method.

The next one outlines Synchronization of 50 Lorenz Chaotic System. The following

chapter brings Six Dimensional Example: Synchronization of 60 Lorenz Chaotic System.

Chapter named Synchronization of Two Different Chaotic Systems brings problem of

synchronization of two non-identical chaotic systems. The chapter demonstrates on

example of synchronization of Rossler and Li.i systems that the synchronization between

different systems is impossible.

The chapter Application on Chaotic Secure Communication System discusses results of

experiments with respect to application in secure communication.

The last chapter Discussions and Conclusions then brings comparison of synchronization

methods and used evolutionary techniques.

The work is written in good English. Its structure corresponds to requirements to PhD

work. I found some errors in language, but they are not significant and I am not native

speaker.

Mistakes and problems found in the text:

Ch. 3.2, 1st line: When there is defined acronym, the original words are written with

capitals.

Many chapters are too short that they should be sub-chapters.

What is the sense of chapter 7, when the following chapters confirm meaning that for

different chaotic system synchronization methods there are needed different cost

functions?

In the experiment description, there is not described if these experiments were performed

only once or repeatedly. Does it mean that results produced by DE and SOMA algorithms

with presented parameters are so repeatable, that it has no sense to discuss problem of

experiment repetition?

What is the influence of signal/noise ratio (ratio of chaotic system signal and transmitted

signal) on efficiency or suitability of communication methods?

And what about transmitted/chaotic signal average values differences? These problems

were not discussed in the work.

**Achievement of aims defined in the work**

• The goals of the work were presented in chapter 2 as:

...

• To simulate several examples of identical chaos synchronization (3, 4, 5, 6-

dimensional chaos systems).

• To simulate the using of EA for synchronization between two difference chaos

systems.

• To simulate a synchronization via PC, APD and Feedback methods.

• To prove that EA are able to estimate the unknown parameters of chaos systems.

• To optimum cost function with SOMA and DE, enhancing the quality of chaos

synchronization.

• To test a performance ofEA in CMS scheme.

It is possible to confirm that these goals were satisfied with respect to above

presented remarks.

Quality of state of art discussion of solved problem in the work

State of art is discussed in chapter 1 (and particularly also in the following chapters). This

discussion is adequate to solved problem.

Theoretical asset of PhD work

The work is practically oriented as concludes numbers of pages devoted to theoretical

and practical parts of the work. The work also brings summarised information about

many chaotic systems.

Practical asset of PhD work

From the practical viewpoint, the work brings results of many experiments with

synchronization of chaotic systems of different types using many Synchronization

Methods.

The suitability of used methods

The used methods are standard research methods and they are suitable to solved problem.

The way how the used methods were applied

These methods were well applied and results are applicable in the further research.

PhD student proved adequate knowledge in given subject.

I recommend the work for defence.

In Prague 24th September*-*

Doc. Dr. lng. Tomas Brandejsky

**Internal examiner report- PhD thesis proposal**

Title: **Behavioral Distributed Dictionary Attack Detection**

Proposer: **Martin Drasar**

Examiner: **Vashek Matyas**

Proposer's PhD thesis proposal deals with issues of anomaly-based attack detection, and in

particular the network-level detection based on analyses of network flows. The stated goals of

future research include a preliminary implementation of aspect-based detection mechanism;

definitions of dictionary attack sets; and then suddenly a production deployment of the dictionary

attack detection in the university network.

The text starts with an introduction, followed by Chapter 2 with a state-of-the-art overview. Both

these chapters are reasonably well written in all but the closing part of Chapter 2. The closing

summary (part 2.4) of the second chapter provides only negative observations without any clear

statement why the author decided for this approach. Moreover, the criticism is not clearly related

to particular methods (phrases like "most of these methods" and "many methods" appear a way

too often). Since it is clear (from these phrases) that the individual points of the criticism do not

apply to all methods, the author failed to provide a solid conclusion what advantages and

disadvantages are to be found in the alternative approaches considered. I am afraid that the author

is too dismissive of other approaches without any solid arguments. A minor observation is that

the problem of "a high positive rate" is not clear - does this imply a high level of false positives

or something else? Chapter 3 describes the proposed research and its scheduled steps.

Language of this proposal is very good, there only very minor issues (commas, some mistakes

like "methods that crafts", etc.) that I found. References to literature should be separated by

spaces and also multiple references done properly.

While I have to admit that I have certain reservations about this thesis proposal, my view is that

the goals and overall focus of the proposed work are (with some added information and

interpretation) of a sufficient merit for a PhD dissertation.

*Unclear issues and questions:*

1. How is the level of stealthiness measured or judged, i.e., how will it be decided whether

one attack is "stealthier" than others or how will an increase in stealthiness be judged?

2. The *WitchdOCtoR* tool is not properly referenced and namely it is not clear why only this

tool is to be used to simulate attacks for further work. It should be made clear what other

approaches were considered and why those are not as useful as the WitchdOCtoR based

generation.

3. It is not clear from the proposal what approach/method will be taken to make the step

from a (simulated) attack description to the proposal of detection. Is the description of

anomalies actually so trivially derived from simulated attacks? If so, why only one tool

for the attack simulation is to be considered? If not, what approach(es) will you consider

to derive the anomaly descriptors from the attack descriptors, and how will you derive the

attack descriptors from the simulated attacks?

4. In the third step of the proposed schedule, an "evaluation of capabilities of other

detection methods" is planned. What methods will these be?

5. Last but not least, the most serious issue I see in the proposed schedule concerns that fact

that a heavy focus is aimed at "crafting" sets of attacks and refining their specification,

but the author pays very little attention to the actual attack detection.

*Proposal:* Approve further work on the topic and goals suggested, with a strong warning that a

substantial part of research work still has to be undertaken (see points above and

recommendations below). With respect to the award of the RNDr. degree, I am unable to decide

for or against since it is not clear from the documentation provided:

• what is the author's contribution to the two documents attached,

• why are these two documents not referenced in the PhD thesis proposal, and

• whether these two documents contain original results that are integral to the

actual research proposal.

*Recommendations to the author:* Firstly, extend your evaluation of other approaches to attack

detection and properly consider their pros and cons. Secondly, consider more than one approach

to attack simulation and generation- and make sure you have representative attack sets. Thirdly,

be very careful when you consider what approaches you take to advance from a

(simulated/generated) attack description to the proposal of detection approach(es) that is/are the

ultimate core aim of your research. Be considerate and keep your eyes open when investigating

and considering di fferent approaches, do not make (too) early conclusions based on immature

results - consider alternatives and examine them in more breadth and depth.

**Examiner’s Report on Miss. PhD Thesis:**

**“Biochemical Studies on the Antidiabetic Effects of Musa paradisiaca Tepal Extract and Antiulcerogenic Potential of Syringin, An Active Phytochemical Isolated from the Musa paradisiaca Tepal Extract”**

This study describes an investigation into differences of the critical components of immune

system between the patients with the type 1 diabetes (T1D) and multiple sclerosis (MS), their

close relatives and healthy control individuals. Specifically, it is focused on the cellular frequency

and function of naïve, activated and memory T lymphocyte populations such as CD4+ and CD8+ as

well as the T-regulatory (Treg) and T suppressor (Ts) cells. It highlights the utility of modern

immunological techniques like fluorescence-activated cell sorting (FACS) analysis, magnetic

separation of cells, multicolour cytometric bead array assay for clinical studies.

Presented thesis reports on results from three seemingly independent studies that overlap in terms

of their unified effort to identify the cellular mechanism underlying an/or accompanying the

development of autoimmune disease, T1D in particular. These three parts are focused on (i) the

cellularity of Treg and Ts cells and the correlation of their suppressive function with the type of

cytokine expression; (ii) the cellularity of naive, activated and memory CD4+ and CD8+ cells and

the correlations of their frequencies with TH1, TH2, Th3 and Th17 cytokine profiles in T1D and

MS patients compared to controls; and (iii) the reactivity of T lymphocyte population derived

from patients with T1D and the controls to diabetogenic peptides presented or not by activated

dendritic cells (DCs).

The thesis is well written up. It consists of 8 chapters and the supplement containing copies of four

publications related to presented thesis. It contains 118 pages with 20 figures, 13 tables and 257

references. The Introduction, Background, Aim of the study and Material and Methods sections

help the reader to follow the logic of the candidate’s argument as she constructs the rationale for

the study, describes its design, procedures and the methods required for its analysis. The result

section is very interesting to read. It clearly demonstrates the complexity of immune cellular

network and a frequent disbalance often seen in the number and function of its components that

accompanies patients with T1D or could predispose their relatives to develop this disease.

Interestingly, the chapter 4.1, graph 1, 2 and 4, point to the fact that healthy relatives of T1D, e.g.

those at certain risk of developing this disease, already differ in immunological parameters from

healthy controls. Even though the immune cells of this group of individuals were not subjected to

other immunological tests described in this study, these results suggest that healthy relatives of

patients with T1D could be the appropriate target group to identify genes, mechanisms and cells

whose altered function could initiate and contribute to pathogenesis of this disease. This could be

a paradigm shifting finding for which the author of this thesis deserves a full credit.

In the result section, Zuzana Mikulková demonstrates her skilfulness and intellectual ability to

undertake the first steps on the way to elucidate the mechanism underlying the misregulation of

immune homeostasis leading to the onset of autoimmunity. Apart from very interesting results she

used quite demanding methodological approaches applied usually in a high-tech research. The fact

that Zuzana Mikulková was able to apply these advanced approaches to her research strategies is a

great achievement for a PhD student. The Discussion and Conclusion sections summarize these

successful attempts and put them appropriately into the context of current knowledge surrounding

the disregulation of immune regulatory circuit in diabetes and multiple sclerosis.

The obvious strength of the study is the connection between clinical and basic immunological

research, a necessary requirement for translational medicine. From the results presented herein it is

clear that all major objectives have been largely achieved and result have been published in wellrecognized

immunological and neurological journals.

While I feel that the Result section is very strong in providing a fresh insight into the complex

regulation of cellular network in T1D, there are several concerns that the author needs to clarify:

1/ based on results described in the chapter 4.1. and as commented above, it seems that the group

of healthy T1D relatives with disregulated frequencies of regulatory T cell population would be

worth of testing in activation assays using DCs and DP mix. Why this group was not used in these

experiments? Do you plan to do so later? What reactivity of this group to DP would you expect?

2/ it seems that the distribution of y-axis values related to %CD3+CD8+CD28+ for healthy kids

(ZD deti) and ZD-adults (ZD dospělí) presented in the graph 7 are very similar and their

interquartile ranges (green boxes) are nearly completely overlapping. However, the author shows

that statistical analysis detected significant difference (p<0.05) between these two groups using

Mann-Whitney U-test. As the raw data are not included in the thesis, an independent analysis is

not possible. Would you explain how exactly this statistic analysis was performed and whether the

raw data are publically available? Similar feeling surrounds statistical results presented in the

graph 11d (ZD vs T1D, p=0.0042) and 14 (right panel, ZD vys riz vs. ZD niz.riz, p<0.05).

3/ From the graph 4 is clear that Foxp3 marker is present only in approx. 60-80% of

CD4+CD25+CD127- regulatory cells. What experimental evidence you have to prove that

CD4+CD25+Foxp3-CD127- cells also function as Treg cells?

4/ on the page 12 and 25 the author states that under certain conditions pancreatic β-cells induce

the expression of MHCII molecules and this, in turn, initiates the inflammatory reaction against

them. Wouldn’t MHCII expression and presentation of self-antigens on these cells lead rather to

peripheral tolerance (induction of anergy and/or deletion) than inflammation and immunity as the

co-stimulatory receptor of B7 family might not be co-expressed? And wouldn’t be more efficient

to present self-antigens in the pancreatic draining lymph nodes rather than on β-cells ? Explain

your view.

**Conclusions and recommendation**

I have identified both the strengths and weaknesses of the thesis, although I have concentrated

mainly upon the latter as is expected in such report. I want to emphasize however, that the above

listed concerns in no way diminish the high quality of work presented in this thesis.

Zuzana